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ABSTRACT

One of six documents describing the Management Information System for Vocational Education (MISVE), this document is intended for MISVE managers and electronic data processing (EDP) operations staff who would be responsible for the implementation and maintenance of the MISVE on the computer. (MISVE was designed to provide users with an advanced management information system (MIS) capability that could effectively respond to current information needs of vocational education managers, to new and emerging data needs, as well as adapt to the unique operational requirements.) In four sections, this document (1) details computer hardware/operating system requirements for implementing and operating SYSTEM 2000 (the generalized data base management system used with MISVE), the programming and operations support, and the training required by EDP technical staff to implement and maintain the MISVE computer software; (2) provides a discussion of the relationships between the MISVE information and computer software subsystems; (3) provides a description of the computer processes that comprise the MISVE computer software support subsystem; and (4) provides the technical EDP staff with documentation required to understand the computer programs involved in the loading and maintenance of the MISVE data base. (SH)

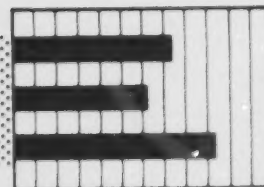
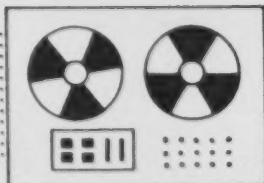
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MANAGEMENT INFORMATION SYSTEM FOR VOCATIONAL EDUCATION

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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MISVE TECHNICAL DESCRIPTION



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The Center for Vocational Education's mission is to increase the ability of diverse agencies, institutions, and organizations to solve educational problems relating to individual career planning, preparation, and progression. The Center fulfills its mission by:

- . Generating knowledge through research
- . Developing educational programs and products
- . Evaluating individual program needs and outcomes
- . Installing educational programs and products
- . Operating information systems and services
- . Conducting leadership development and training programs

MISVE TECHNICAL DESCRIPTION

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FOREWORD

Vocational education agencies require management information systems that will assist them in their program planning, evaluation, monitoring and reporting responsibilities. The Management Information System for Vocational Education-- MISVE was designed to provide users with an advanced MIS capability that can effectively respond to current information needs of vocational education managers, as well as to new and emerging data needs. MISVE has been designed to promote flexibility so that it can be adapted to the unique operational requirements of its users.

Invaluable cooperation and assistance in the development and field trial of MISVE was provided by Robert Stump, project officer, the National Institute of Education; Jack Wilson, project officer, the U.S. Office of Education, Bureau of Occupational and Adult Education, Division of Research and Demonstration; and to the staff of the Colorado State Board for Occupational Education who were involved in the MISVE field trial. Recognition is due also to the staff of MRI Systems Corporation who developed the MISVE applications programs and assisted in the preparation of MISVE documents, to the many states and staff persons who served on MISVE applicability panels to review system developments and outputs, and to the many persons who provided reactions and valuable advice for revising the present set of MISVE documents. Significant contributions to the final product were also made by Harold Starr, project director, Michael Black and Kenney Gray, research specialists, and other Center staff.

Robert E. Taylor
Director

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EDP ENVIRONMENTS AND REQUIREMENTS

SECTION I

EDP ENVIRONMENTS AND REQUIREMENTS

SECTION I

1. RESOURCE REQUIREMENTS

This section provides a description of the EDP resources required to implement, operate and maintain the MISVE prototype system. The basic determination of resources arises from the use of SYSTEM 2000, a generalized data base management system (GDBMS). The resource categories discussed are:

Computer Hardware/Operating Systems

Programming Support

Operations Support

1.1 Computer Hardware/Operating Systems

MISVE/SYSTEM 2000 can be operated on IBM, CDC, and UNIVAC computers. The prototype MISVE is currently operational at The Ohio State University, Center for Vocational Education, in an IBM/370-168 under the OS, TSO environment utilizing the SYSTEM 2000 self-contained language and COBOL Procedural Language Interface features.

Operating Environments

IBM Mainframe:	360/40, 370/135 with 512K of core
Operating Systems:	OS/MFT; OS/MVT; VS1; VS2
*Memory:	150-200K for Self-contained Language 250K for COBOL PLI
Peripherals:	Card Reader Printer One 7 or 9 Track Tape Drive One 2314 or 3330 Disk Drive TSO, TP2K, CICS, or INTERCOM

*The indicated amount of memory needed is an estimate. The exact amount will depend upon the specific configuration of SYSTEM 2000 and the users data processing environment.

UNIVAC Mainframe:	1100 Series with 131K of core
Operating Systems:	EXEC 8, CSTS
*Memory:	30K Self-contained Language
Peripherals:	Card Reader
	Printer
	One 7 or 9 Track Tape Drive
	One Disk of FASTRAM Drum

CDC Mainframe:	600 Series, CYBER 70 Series with 65K of core
Operating Systems:	KRONOS, SCOPE, SCOPE/INTERCOM
*Memory:	20K Self-contained Language
Peripherals:	Card Reader
	Printer
	One 7 or 9 Track Tape Drive
	One Disk or Drum

1.1.1 service bureau environment

A number of computer service bureaus provide SYSTEM 2000 support. Therefore, MISVE can be implemented by organizations that either do not have computer facilities or that do not currently have excess capacity. There are bureaus that supply CDC, UNIVAC, and IBM versions of SYSTEM 2000.

1.2 Programming Support

A major factor in the selection of SYSTEM 2000 for the MISVE system is the minimal skill levels required to effectively use this GDBMS. The following discussion identifies both the conventional programming and minimal SYSTEM 2000 skills required to implement, operate and maintain MISVE. The categories of programming support that are covered are:

- . applications programming
- . systems programming
- . data base administration

1.2.1 applications programming

The MISVE prototype requires the part-time support of one application programmer who possesses three basic skills. The skills include a working knowledge of:

- . ANSI COBOL
- . SYSTEM 2000 COBOL PLI
- . SYSTEM 2000 NATURAL LANGUAGE

The level of COBOL competence required is that normally associated with the processes of data validation, file maintenance, and report generation. The only unusual or special COBOL feature utilized is the "SORT" verb.

The level of SYSTEM 2000 COBOL PLI and SYSTEM 2000 NATURAL LANGUAGE competence required is that which is taught in a one week course. The course is available through MRI Systems Corporation, the GDBMS vendor, and covers such topics as:

- . natural language syntax
- . PLI command language
- . hierarchical structures
- . multiple index processing
- . optimal modes of processing

1.2.2 systems programming

The MISVE prototype requires the part-time support of one systems programmer who possesses three basic skills. The skills include the ability to:

- . maintain object and executable program libraries
- . construct cataloged procedures for job control or run stream libraries
- . construct command procedures for control of interactive mode operations

The systems programmer is not required to use generative procedures to install or maintain SYSTEM 2000. Procedures for the establishment, maintenance and validation of the system are taught to the systems programmer during the initial installation.

Sample models of cataloged job control procedures are also developed and tested by the vendor's personnel and are provided to the systems programmer. Maintenance of the GDBMS itself is performed by MRI Systems Corporation.

1.2.3 data base administration

The design of SYSTEM 2000 makes it feasible for the data base administration functions concerned with programming support to be provided by either application or systems programming personnel. In some cases, the application user personnel have fulfilled this role. In any case, the MISVE prototype requires the part-time support of one data base administrator (DBA). While full-time support of a DBA is generally required during the initial development of an application, SYSTEM 2000 users report that a DBA can be effective in the concurrent administration of three GDBMS applications. The required level of competence can be attained from two weeks of classes taught by MRI Systems Corporation. The classes cover such topics as:

- . data definition language
- . self-contained language commands
- . hierarchical structures
- . multiple index processing
- . security
- . back-up/recovery
- . diagnostic procedures
- . performance analysis methods
- . data base design optimization

With the exception of job control, command procedure, or run stream languages of the host operating system, the DBA is supported by SYSTEM 2000 with English-like languages (non-programming languages). These languages allow the DBA to perform the many tasks associated with the above topics. Therefore, the potential DBA need not possess programming

skills but should utilize the logical problem solving methodologies normally associated with EDP.

1.3 Operations Support

The use of SYSTEM 2000 does not require special training of, or support from, the operations staff. The GDBMS and the application software run as normal problem programs under the conventional operation system. The prototypic MISVE does have impact upon two conventional operational support services.

Those services are:

- . input/output control
- . keypunch

Although the individual operationalization of the MISVE data capture, maintenance and reporting procedures can be easily accomplished, there are two characteristics that are likely to be present that will require special attention. First, the data collection is likely to be conducted at the local level across the state and data processing will be performed at a central site. Under these circumstances the input/output control function will need to accommodate the following conditions:

- . recycling of errors
- . coordination of multiple input schedules
- . local report distribution (if utilized).

Secondly, data capture and maintenance processing are likely to be "bunched" into peak periods such as the beginning and ending of the school year.

2. SUMMARY

The EDP resources required by the MISVE prototype system can be categorized as either hardware/operating system, programming support, or operations support. Through the selection of the SYSTEM 2000 GDBMS a minimum of resources is required while a wide coverage of computing facilities is pro-

vided. Necessary training is readily available and requires minimal time and personnel.

INFORMATION SUBSYSTEM - COMPUTER SOFTWARE RELATIONSHIPS

SECTION II

INFORMATION SUBSYSTEM - COMPUTER SOFTWARE RELATIONSHIPS

SECTION II

This section provides the data base administrator and application programmer with an overview of the MISVE data base, its definition and structure, and a description of SYSTEM 2000 self-contained language commands for servicing ad hoc reports. A detailed description of SYSTEM 2000 is found in Appendix A. The reader who is unfamiliar with SYSTEM 2000 or GDBMS technology in general will find this description helpful in understanding MISVE information system - computer software relationships. For a description of the selection process used to identify SYSTEM 2000 as the GDBMS for use with MISVE see Appendix B.

This section contains certain terms unique to SYSTEM 2000. A sample data base, tree diagram, and definition are depicted in Figure 1, An Inventory Data Base, to clarify these terms through examples.. A more complete explanation of these terms is found in Appendix A.

1. SYSTEM 2000 TERMINOLOGY

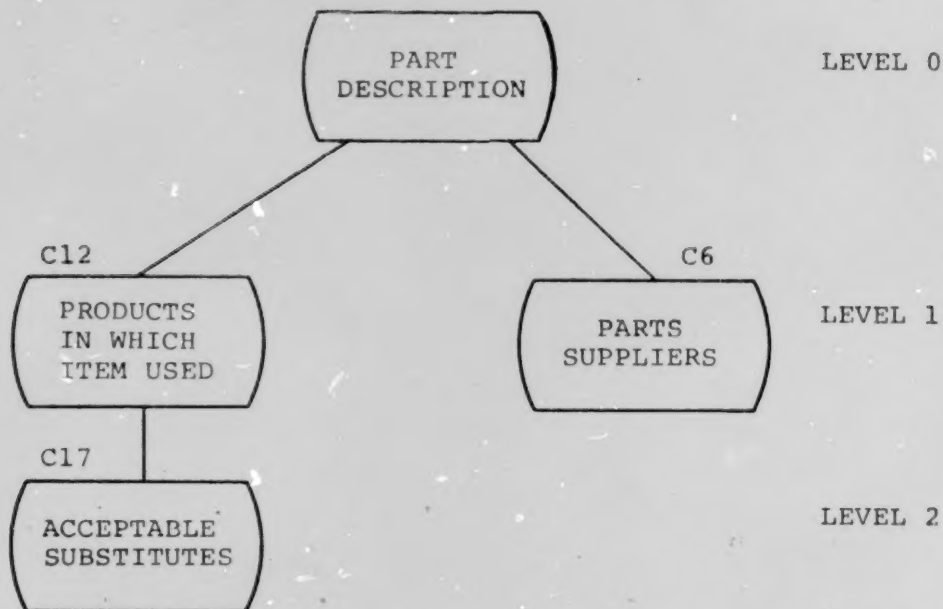
Tree Diagram - a schematic drawing illustrating the logical relationships between groups of data within the data base.

Definition - a formatted list of all data elements which show both their individual characteristics and relationships to other elements.

Component - an individual data element. A component may be designated by name (e.g., PART NUMBER) or by its component number (C2-the "C" standing for "component").

FIGURE 1
AN INVENTORY DATA BASE

DEFINITION TREE DIAGRAM:



DEFINITION:

DATA BASE NAME IS INVENTORY:

- 1* PART NAME (NAME):
- 2* PART NUMBER (INTEGER):
- 3* MINIMUM REORDER LEVEL (INTEGER):
- 4* MINIMUM REORDER QUANTITY (INTEGER):
- 5* BIN LOCATOR (NAME):
- 6* SUPPLIERS (REPEATING GROUP):
 - 7* SUPPLIER (NAME IN 6):
 - 8* ADDRESS (NAME IN 6):
 - 9* CITY (NAME IN 6):
 - 10* STATE ZIP (NAME IN 6):
 - 11* TURNAROUND ON DELIVERY (NAME IN 6):
- 12* PRODUCTS IN WHICH ITEM USED (RG):
 - 13* PRODUCT (NAME IN 12):
 - 14* STANDARD ORDER QUANTITY (INTEGER IN 12):
 - 15* EXPECTED FREQUENCY (NAME IN 12):
 - 16* PLANT IN WHICH PRODUCT MADE (NAME IN 12):
 - 17* ACCEPTABLE SUBSTITUTE ITEMS (RG IN 12):
 - 18* SUBSTITUTE PART NAME (NAME IN 17):
 - 19* SUBSTITUTE PART NUMBER (INTEGER IN 17):

Level - a logical concept describing the relative superordinate/subordinate relationship of a group of data within a data base, as defined in the data base definition; that is, the logical vertical position which a data group occupies. In Figure 1, An Inventory Data Base, a three level data base is depicted. The top level is LEVEL 0. Successive subordinate level numbers are increment by one.

Repeating Group (RG) - a logical grouping of components, related to other repeating groups in a manner specified by the data base definition. A repeating group name has a component number just as does a data element, and is distinguished from an element in the data base definition by (REPEATING GROUP) or (RG) following the RG name - e.g., 6* SUPPLIERS (REPEATING GROUP). In the example in Figure 1, An Inventory Data Base, there are four RGs. Three of them, C6, C12, and C17 are named in the definition, and the other occurs at the highest level (LEVEL 0) of the data base and is implicit in the definition.

Data Set - an occurrence in the data base of an RG. It is important to note that the RG is a concept related to the data base (DB) definition where the data set is actual data within a data base formatted according to an RG description.

Parent RG - the next higher level repeating group to which an RG is vertically connected. In the example Inventory Data Base PARTS DESCRIPTION is the parent RG of PARTS SUPPLIERS and PRODUCT IN WHICH ITEM USED. An RG can have only one parent, but a parent may have many "children".

Logical Entry - a LEVEL 0 data set and all its subordinate data sets. A data base may contain one or more logical entries. The MISVE data base contains three logical entries, a number chosen for technical reasons related to ease and efficiency of processing.

Schema - a data holding area within a procedural language interface (PLI) program used for transferring data to and from a data base. A separate schema must be defined for each RG accessed.

2. DATA BASE OVERVIEW

SYSTEM 2000 supports the use of hierarchical data structures that may contain multiple indexed fields within any or all levels of the hierarchical structure. Both hierarchical structure and multiple indexing techniques are utilized in MISVE data base definition. The following discussion describes the:

- . categories of data contained in the data;
- . the hierarchical relationship that exists among each category;
- . the structural composition of the complete data base; and,
- . the cross reference relationship that exists between fields within the source data instruments and the data base definition.

2.1 Categories of Data

The MISVE prototypic data base is not intended to be a completely comprehensive definition of data needs for each and every state organization, for any and all points in time. Rather, the purpose of the MISVE approach is to efficiently accommodate modification of the data base definition in terms of the:

- . categories of data maintained;
- . relationships among the categories; and,
- . individual fields of data maintained.

As a starting point to illustrate this "flexible" approach the MISVE prototypic data base contains the following seven categories of data:

- . staff data
- . program data
- . equipment and materials request data
- . facilities data
- . finance data
- . manpower data
- . table translation data

2.1.1 staff data

The purpose of the staff data is to provide information about instructional and administrative staff responsible for vocational education instruction and supervision and consists of credentialing, assignments, and professional experience data. The various types of staff data identified by name and data base structural definition number* (repeating group) are:

- . staff personal identification data C8
- . vocational credential data C71
- . professional improvement data C122
- . current assignments data C134
- . projected staff requirements: district aggregate C200
- . current and projected staff requirements by program C254

2.1.2 program data

The purpose of the programs data is to detail who was served, when and how student training was accomplished and includes populations served, durations and types of instructional programs. The various types of program data and their respective RGs are:

*Appendices C and E, MISVE Data Base Tree Structure Broken Into Units, and Breakdown of MISVE Data Base identify structural occurrences by name and number. Appendix D, MISVE Data Base Definition, provides a detailed definition of the data base.

. program code data	C227
. program approval number data	C239
. student enrollment status by individual	C278
. student follow-up	C365
. special needs data by individual	C398
. beginning-of-term enrollment (aggregate)	C431
. end-of-term enrollment (aggregate)	C461
. characteristics of special needs students (aggregate)	C539
. program completions (aggregate)	C584
. application for new/con- tinuing programs	C761
. vocational courses	C908
. potential jobs data	C947
. terminal performances	C959
. program advisory committees	C968

2.1.3 materials and equipment data

The materials and equipment data consist of detail concerning equipment and materials utilized in providing student instruction. These data are found in the following RGs listed below:

. equipment and materials code table	C995
. equipment, special materials and services funding data	C638

2.1.4 facilities data

The facilities data is used to identify the physical characteristics of facilities used for student instruction. The types of facilities data and the RGs containing these data are listed below:

- . resource requirements C698
- . application for new/contin- C761
uing programs
- . school/community facilities C926

2.1.5 financial data

The purpose of the financial data is to provide information related to how much the student instruction costs.

The types of financial data and their respective RGs are as follows:

- . cost of equipment, special C638
needs and services
- . resource requirements C698

2.1.6 manpower data

The externally generated manpower demand data are used to identify the projected demand for a number of occupations for which students in vocational education are being trained.

Manpower demand data are contained in the following RGs:

- . current and projected demand C157
for various census codes and
titles
- . current and projected demand C176
for various DOT and OE codes
and titles

2.1.7 translation tables data

The purpose of the translation tables is to provide for the conversion of coded data to descriptive data. The translation tables and their corresponding RGs are:

- . county name and table C143
- . district name table C152
- . program code table C167
- . DOT/OE code table C176
- . Census/OE code table C157
- . equipment-materials code C995
table

2.2 Relationships of Data

While there are a number of types of data within each category, there is not necessarily a direct hierarchical relationship among all types within the same category. It is more logical in some instances to subordinate one type data to a different data type. If the reader will refer to Appendix C, MISVE Data Base Tree Structure, an example can best illustrate this point.

It is logical that the staff personnel data be structured such that Vocational Credential Data (C71) and Administrative Assignments Data (C134) be subordinate to the individual staff member's basic data (C8). That is, each staff member might possess more than one set of credentials or might have had more than one instructional assignment. Likewise an individual might have taken more than one professional improvement experience (C122) within each of several credential programs. In this way, the hierarchical structure of the MISVE data base definition relates types of data within a category.

On the other hand, it is also logical that the Current and Projected Instructional Staff Requirements (C254) be subordinate to an appropriate Program (C227) and Program Approval Number (C239) for which the specific staff are to be utilized. In this way the hierarchical structure of the data base definition relates various types of data to a common occurrence without the conventional EDP use of redundant cross reference codes stored in multiple files.

A review of Appendices C and D will provide the reader with an understanding of the relationships that exist among the various data types, and the specific data fields contained within each type.

2.3 Complete Structure

Up to this point the data base has been discussed as a

logical structure, but the physical capturing of the data does not follow the logical data base definition. This is true in order to simplify the logic of the data from one school year to the next while minimizing the amount of disk storage. While the data base definition would indicate that all data are subordinate to a single entry of the state data (C5), the actual case is that state data are recorded three times. One entry of the state data is used to record the Staff Personnel data (C8) and the subordinate data types. The second entry is used to capture translation table data. The third state entry records the District Data (C185) and its subordinate data. In this way, the logic of the maintenance programs is simplified and modifications in these programs can be accomplished more easily.

The self-contained languages of SYSTEM 2000 can be used to transfer the staff and translation table data to a new school year data base without the need to write additional maintenance programs. The MISVE maintenance programs can then be used to introduce the remaining information for the new school year as well as modify the staff and student/programs data if required. The only disk storage required is that which is necessary to hold the current data.

The SYSTEM 2000 self-contained language also supports the movement of the old data base to archival storage on tape before being replaced by the new school year data base. In this way, historical analysis may be conducted on previous data bases or concurrent processing of two or three years of data bases (last year, current year, next year) can be accomplished with minimal disk storage utilization. The MISVE maintenance programs are designed to support multiple year data bases if the user has the disk storage and desires to have historical current and projected data in a single data base.

2.4 Cross Referencing

A cross reference between fields contained in the source

data instruments (SDI) and the corresponding fields in the data base is found in Appendix A, MISVE Source Data Instrument Field to Data Base Field Cross-Reference, in the "MISVE Source Data Instrument Input Procedures" document. Appendix B, MISVE Data Base Field to Source Data Field Cross-Reference, found in the same document provides a similar capability except that the cross reference goes from any data base field to the corresponding field in the SDI.

3. SOURCE DATA INSTRUMENTS OVERVIEW

The purpose of this discussion is to make the application programmer and data base administrator aware of the basic design philosophy behind the prototypic SDI. The purpose of this discussion is not to provide detail concerning the source data instruments. The reader should review the "MISVE Source Data Instrument Input Procedures" document to gain a better understanding of the individual data capture forms as well as the instructions for recording, keypunching, and editing the data.

In order to maintain the greatest degree of flexibility to accommodate modification in the SDIs, two methodologies are used to deal with the format of the forms and the corresponding data base definition. First, unused space is left in many cards where multiple cards are required for a SDI. The unused space usually occurs where there is a logical "break" in the form. The intention is to allow for additional data fields as well as the deletion of entire cards of data with minimal impact upon the programs. The second methodology has the structural divisions of the data base definition correspond to either a SDI or a card wherever possible. Again, data base structure may be added or deleted with minimal impact upon the MISVE subcomponents.

4. REPORTS OVERVIEW

Historically, EDP assistance to an application user has

followed the development procedure of:

- . Specifying reports that provide the needed information (even paychecks are a form of reports).
- . Identifying the source data necessary for the generation of the reports.
- . Specifying the algorithms that transform the data into information.
- . Developing the file structures, record formats and programs that automate the specific data maintenance and report generating processes required by the application.

Invariably, the application user's "outside world" changes with the result that the reporting requirements also change. The resulting system modifications can be costly and time consuming. Therefore, operations requiring unstable or uncertain reporting procedures have not been likely candidates for EDP applications. This exclusion, of course, has neither eliminated nor simplified the user's original problem.

SYSTEM 2000 provides several techniques that provide the EDP staff with the ability to support changing applications. These techniques include:

- . File, record, and data independence to the program level,
- . Automate data base adjustment to definition modification.
- . English-like commands to provide a full spectrum of data management services - data definition, security, and monitoring, as well as data capture, maintenance and reporting.

4.1 Ad Hoc Reports

One of the options available to the MISVE user through the use of SYSTEM 2000 is the ability to specifically tailor reports to accomplish the job at hand without developing a program for each need. Ad hoc (on-demand) reporting can be drawn from the data base as necessary with the self-contained English-like languages. Both programming and non-programming users can pose ad hoc queries with a minimal training period.

The self-contained languages provide the ability to utilize the multiple indices for qualification of specific subsets of the data base before the action portion of the command is executed. The qualification is made upon as many indexed fields as is necessary to isolate the specific data or group of data. The action portion of the command can specify maintenance or retrieval operations and can have singular, subset, or global effect upon the data base.

4.1.1 user options

The SYSTEM 2000 self-contained language allows the MISVE user many options. Queries may be entered in either batch or interactive processing modes. In either mode, various methods are available to retrieve and format information. Some frequently used choices are briefly explained in the remainder of this section.

4.1.1.1 print command

The PRINT command retrieves user specified data from the data base. The information is produced in a simple vertical list of output and can include arithmetical output.

4.1.1.2 list command

The LIST command produces columnar output much as a report writer would, but requires only a single statement command. Optional format specifications allow the user to control column widths and headers as well as page headings, footings, and ejects.

4.1.1.3 tally command

The TALLY command is used to obtain frequency distribution analysis reports for the unique values of data elements specified as "key" in the data base definition. The reports can be produced in either detailed or summary formats, and a single command can specify analysis of one or more fields.

4.1.1.4 string command

SYSTEM 2000 allows the self-contained language user to store the definition of often used commands within the data base. These commands can then be executed by referring to them by a user-prescribed name or number. These stored commands can also have user-supplied variables introduced at execution time. Entire procedures of multiple commands can also be stored. Subsequent execution of multiple commands can be achieved with a single statement.

4.1.1.5 report writer

This feature of SYSTEM 2000 enables the user to prepare report specifications following a set of reporting formatting conventions. The Report Writer operates in either a batch or interactive mode and can produce up to 100 reports in one pass of a subset of the data base.

The user is permitted to specify headings and footings for each physical page, logical section, and for the report as a whole. The user may also insert or replace characters in output items, and control printing, item inclusion, page ejection, and accumulation dynamically via conditional statements. In addition to data base items, reports may specify desired items which are built from sums, counts or arithmetic combinations of other sums

4.1.2 ad hoc reporting summary

More detailed information concerning the immediate access capabilities of SYSTEM 2000 can be found in the SYSTEM 2000 Reference Manual available from the vendor of the software. Examples of each of the commands are provided in Appendix F.

COMPUTER SOFTWARE SUPPORT

SECTION III

R

COMPUTER SOFTWARE SUPPORT

SECTION III

This section provides a description of the computer processes that comprise the MISVE software support subsystem. The basic set of processes involves those computer programs that are responsible for the storing of the source data and the generating of information. There are other activities of "one-time" nature of "seldom-used" frequency that are also a subject for discussion.

1. SOFTWARE SYSTEM OVERVIEW

The MISVE prototype software support subsystem contains six programs plus SYSTEM 2000. The six programs are written in ANSI COBOL. One program utilizes the COBOL SORT verb facility. One program, EDIT, is a stand-alone program. The four remaining programs access the data base using the SYSTEM 2000 Procedural Language Interface (PLI) facility. The system flow diagram in Appendix G illustrates the sequence of operations and file passage relationships that exists among these programs. In general, the primary data capture process is as follows:

Source data is edited for errors.

Edited source data is sorted into data base sequence (including hierarchical structure sequence).

Either new data is "loaded" into the data base (such as at the beginning of a new school year) or existing data is updated with additional or changed data (such as the recording of additional certification data for staff members.)*

*A study of the "Source Data Instrument Input Procedures" document will provide the best understanding of when a source data instrument would be used in an update or load operation. It is the purpose behind the use of the SDI, then, that determines the schedule of load versus update runs.

A secondary data capture process consists simply of building (loading) the various translation tables with a program written specifically for that purpose.

The self-contained language facilities of SYSTEM 2000 are also used for maintenance processes. The following are examples of the types of processing provided:

- . data base definition
- . password security implementation and maintenance
- . back/recovery
- . reorganization
- . archival copying
- . performance monitoring
- . global data modifications, insertions, or deletions
- . transfer of data across data bases

2. INITIAL START-UP

Prior to achieving the day-to-day operation of the MISVE prototype the system must be installed, the data base must be defined, and an initial data base must be loaded.

2.1 System Installation

SYSTEM 2000 is installed by the vendor, MRI Systems Corporation, usually in one day of on-site time. Prior to the on-site visit, MRI's installation staff will have identified and verified the computer center's environment with a user designated systems programmer.

The MISVE COBOL programs and the sample job control and command procedures are available in standard host operating system libraries. The libraries are delivered on magnetic tape with accompanying documentation on the procedures necessary to install in the specific computing center.

2.2 Data Base Definition

The MISVE prototype definition statements are also in the

libraries that contain the COBOL programs and are illustrated in Appendix D. If the user wishes to develop another definition, the data definition language facility (DDL) of SYSTEM 2000 eliminates the need to develop any separate utility procedures. In an IBM environment, it is required that the file sizes be allocated (primary and secondary extents) in the initial job control statements. Therefore, the data base file sizes must be determined in advance. These sizes will vary depending upon the nature of the data values and will be particular to each application. The necessary estimation techniques are provided by MRI Systems Corporation.

Actually, all versions of SYSTEM 2000 (CDC, UNIVAC, and IBM) automatically accommodate variations in the size of a data base, but because of the likelihood of large data bases in any MISVE application, a user should estimate disk storage utilization as a matter of course.

2.3 Initial Load

Once in a normal operating cycle, the various data elements will be loaded or updated at different times throughout the school year depending upon the needs and conditions particular to each application of MISVE. It is likely, though, that some applications will begin by recording a full year of data and loading it in one initial load. The loader program is designed to accommodate both the initial and cyclical loading methodologies. Incremental loading, which is an optimizing technique taught in the GDBMS PLI Course, can also be used without modification of the load programs.

3. CYCLICAL PROCESSING

Each application of MISVE will require a schedule of data recording, data capture, and information reporting particular to the environmental conditions and needs of each user. The programs responsible for the loading and updating of data are

designed to accommodate a wide range of data capturing sequences. These programs, in many cases, will automatically generate missing hierarchical structure, will spread general purpose data across the data base, and will prevent duplication of unique data (e.g., social security number).

3.1 Annual Processing

The MISVE system assumes an annual cycle as its basic schedule. The primary distinguishing element for each separate school year is the data field contained in the top level data group of the hierarchical structure. This field can be used to select the specific data desired for loading, updating or reporting. In this way, several years of data may be addressable in the data base.

The prototypic MISVE software assumes a method other than the use of data field to distinguish between school years. It is felt that availability of disk storage will be a prime limiting factor in most MISVE applications. That is, there will be a limited amount of disk storage available, either due to expense or capacity restrictions. Therefore, the MISVE prototype software is designed to have each year's data contained in a separate data base. In this way, only one year of data need to be "on-line" at any time, but data for any given year can be moved back and forth between disk and tape storage with SYSTEM 2000's self-contained archival manipulation commands (i.e., save and restore functions).

For those conditions where data in one year should be carried on into the following year, the self-contained "UNLOAD/LOAD" commands can be used to selectively move subsets of a data base without the need to write programs.

These various self-contained commands and techniques are taught in the basic one week course provided by the vendor.

3.2 Computer Programs

The six MISVE COBOL programs are:

- . EDIT
- . SORTKEY
- . LOAD
- . UPSTAFF (Update staff data)
- . UPSTUD (Update student and program data)
- . TABLOAD (Load translation tables)

SECTION III, Documentation for the Data Base Load and Maintenance Programs, is devoted to an overview explanation of these programs.

DOCUMENTATION FOR THE DATA BASE
MAINTENANCE AND LOAD PROGRAMS

SECTION IV

DOCUMENTATION FOR THE DATA BASE
MAINTENANCE AND LOAD PROGRAMS

SECTION IV

1. EDIT

The EDIT program checks the data transcribed from the SDIs for errors. The various tests verify that the content of each card conforms to the directions prescribed for completion of each SDI. (These directions are presented in the "MISVE Source Data Instrument Input Procedures" document). A report is produced that lists any cards that contain errors as well as the location of the errors. Error free data is stored for subsequent processing by the SORTKEY program. The current EDIT program is limited to checking individual cards for errors. It does not check for proper interrelationships among the cards.

1.1 Flow Diagram

Figure 2, MISVE System Flow for the EDIT Program illustrates the EDIT program's sequence of operations and file passage relationships.

1.2 Layouts

1.2.1 files

1.2.1.1 input

The data are in 80 column card format. Section III, Key punch Instructions and Card Layout Formats found in the "MISVE Source Data Instrument Input Procedures" document describes the record layout for the card input.

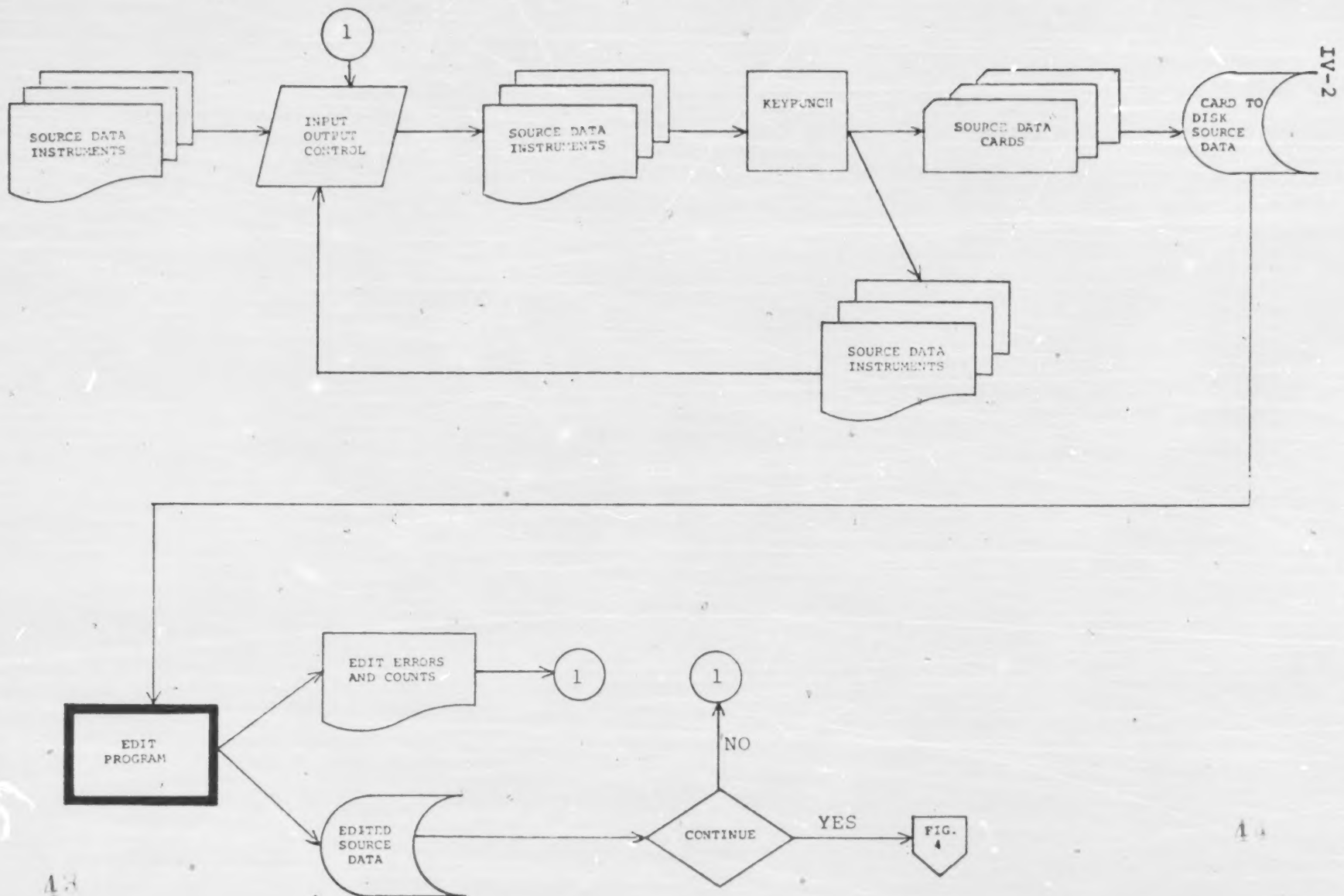
1.2.1.2 output

All edited data cards are kept in 80 column format and are stored on a disk device or tape for archival purposes.

1.2.1.3 report

The report is an error list of those data fields not passing the tests of the edit routines. The cards are printed in the same format as they were input, with an identifier

FIGURE 2
MISVE SYSTEM FLOW FOR THE EDIT PROGRAM



printed under the item in error for easy recognition.

1.3 Control Information

1.3.1 control switches

No special control switches or other input parameters needed to execute the edit program.

1.4 Logic Flow Diagram

The logic flow for the EDIT Program appears in Figure 3.

1.5 Processing

1.5.1 program features

The program is written in COBOL. No special interface language is needed.

1.5.2 execution

As the cards are read into their work area the program edits for correct card codes. Each type of card has its own routine for data editing. As each field within a card is checked and an error is detected, a field flag corresponding to the error is set. The card is thoroughly checked regardless of the number of errors detected. If at the end of the error check the error flag is on, the card is printed with all errors identified.

1.5.3 end-of-job process

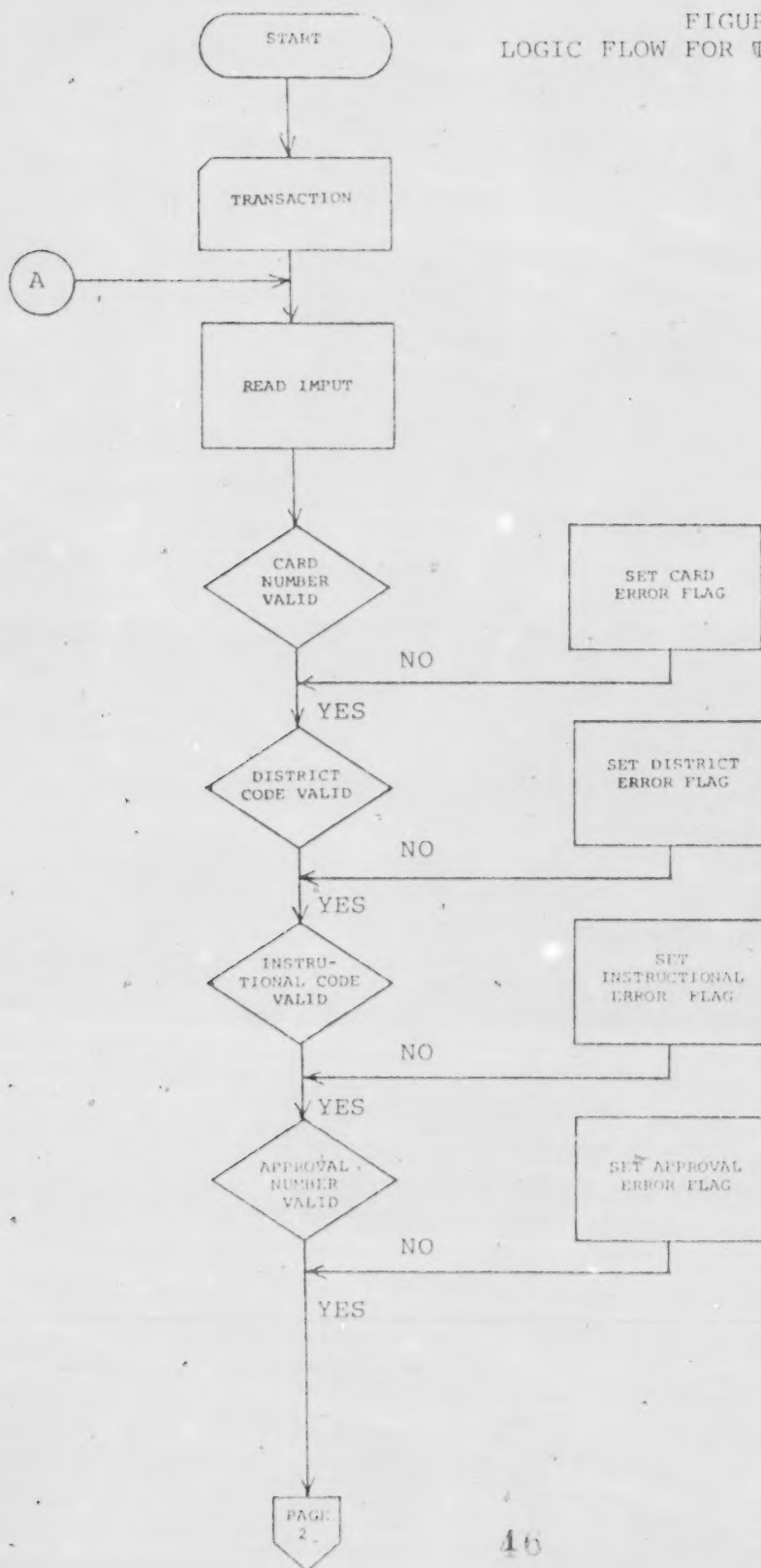
1.5.3.1 restart

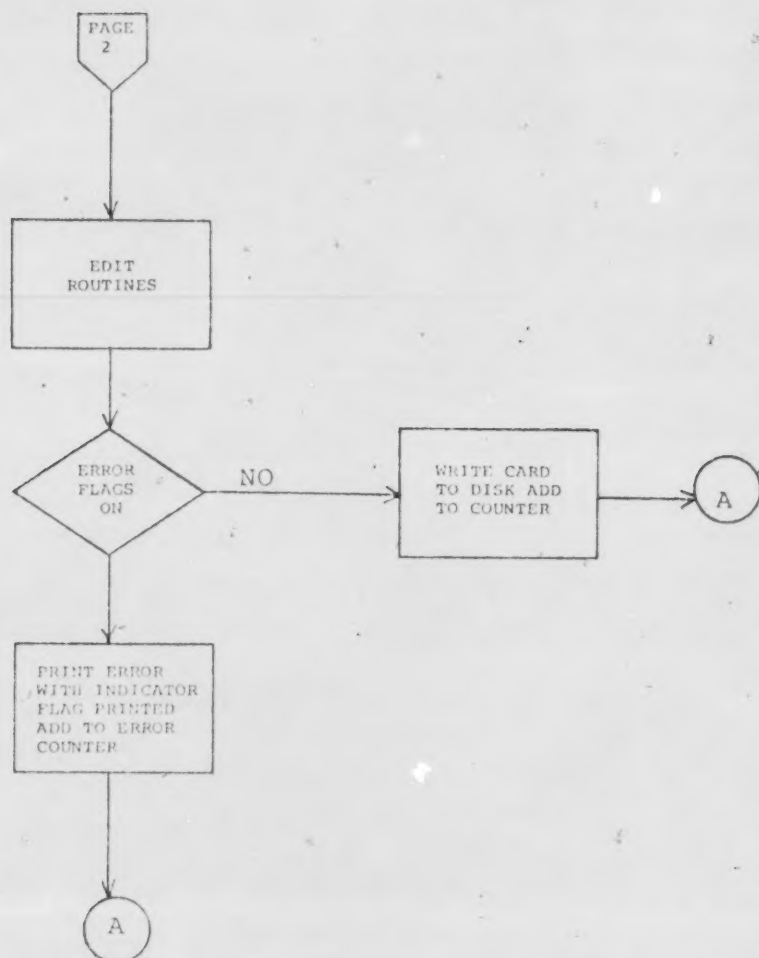
If there is a failure for any reason, the job is to be restarted at the beginning of the program.

1.5.3.2 report

The error report, which also contains counts of input records, is to be delivered to I/O control for processing.

FIGURE 3
LOGIC FLOW FOR THE EDIT PROGRAM





2. SORTKEY

The sort preparation program, SORTKEY, processes the valid source data records produced by the edit program. The program performs three basic functions:

- . Creates additional transactions for the load or update programs to assure the proper construction of the hierarchical structure of the data base.
- . Creates additional transactions for the load or update programs to "spread" common data that is to affect more than one repeating group of data.
- . Sorts the source data records into the proper sequence for load or update program processing. The output transactions are separated into two files. One file contains the staff transactions; the second contains the student and programs transactions.

2.1 Flow Diagram

Figure 4, MISVE System Flow for the SORTKEY Program, illustrates the SORTKEY program's sequence of operations and file pass relationships.

2.2 Layouts

2.2.1 files

2.2.1.1 input

The data are in 80 column card format.

2.2.1.2 output*

Two files are output in sorted order: the staff file and the student/instructional programs file.

2.2.1.3 report

Record Counts are displayed for both output files for audit count and verification purposes.

2.3 Control Information

2.3.1 control switches

No special control switches or other parameters are needed to execute this program.

2.4 Logic Flow Diagram

The logic flow for the SORTKEY program appears in Figure 5.

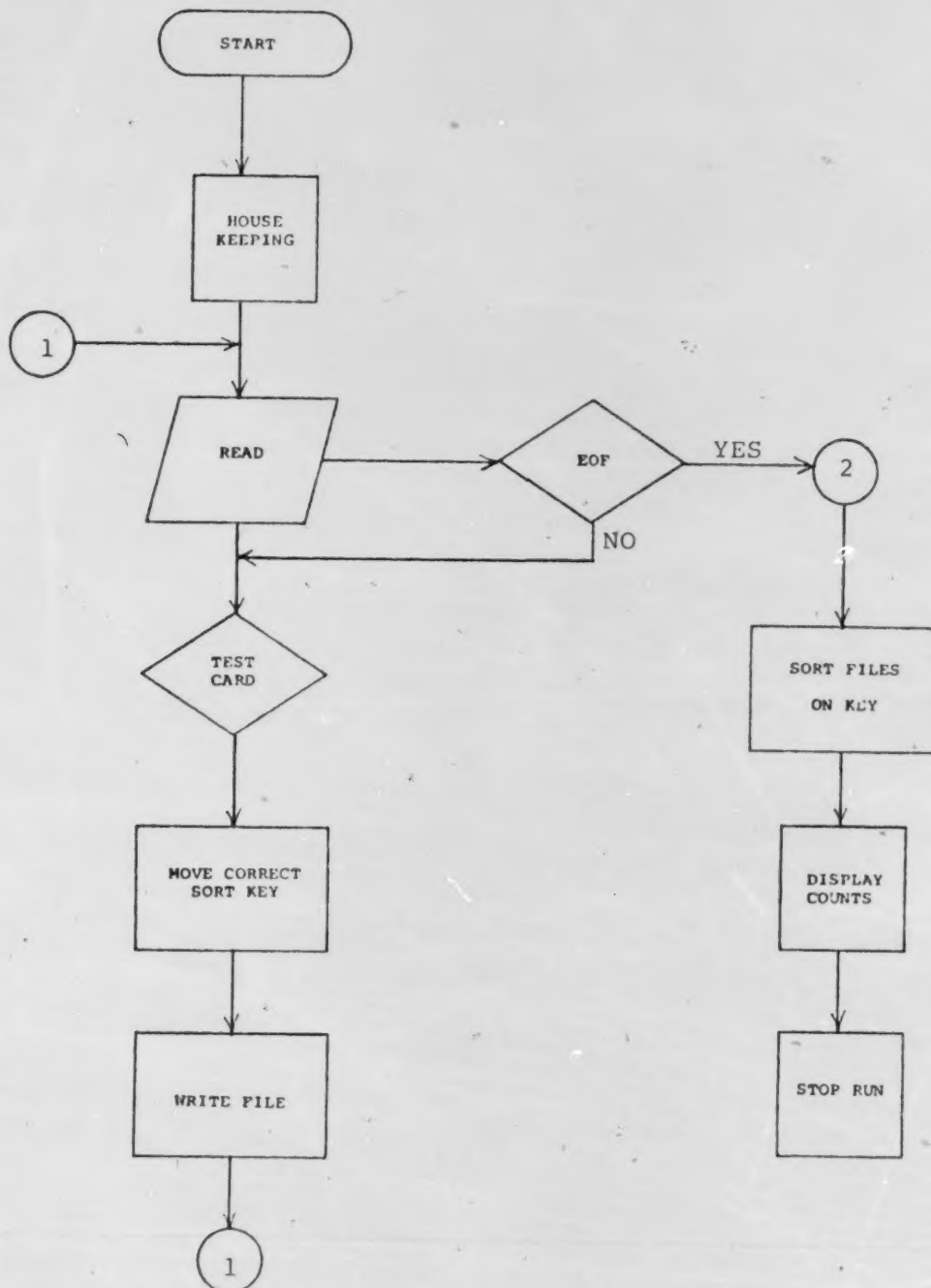
*Output record length for staff file - 90 characters.

Output record length for student file - 92 characters.

FIGURE 4



FIGURE 5
LOGIC FLOW FOR THE SORTKEY PROGRAM



2.5 Processing

2.5.1 program features

The program is the standard COBOL with COBOL sort interface used.

2.5.2 execution

Data is read from the file created by EDIT. As each card is read the card code is validated and a one character alphabetic code is appended to the beginning of the record. The expanded records are written to two scratch files, one for student/programs data and the other for staff data. Certain records are written out more than once, with a different code appended each time. They are so treated because they contain data for different levels of the data base, and writing them more than once facilitates the loading process logic. (Note that this processing will create a discrepancy between the end-of-job (EOJ) record counts for the EDIT and SORTKEY Programs). When all input records have been read and processed, the scratch files are sorted using the appended codes and other record data as keys. The two resulting files are ready for input to the load or update programs.

2.5.3 end-of-job process

2.5.3.1 restart

If program aborts for any reason or there is a system failure, resolve the problem and restart the job.

2.5.3.2 report

Sort Counts and Record Counts are to be used as audit and verification totals only.

3. LOAD

The LOAD program receives data created by the Sort program and loads the MISVE data base in tree-structure order.

3.1 Flow Diagram

Figure 6, MISVE System Flow for the LOAD Program illustrates the LOAD program's sequence of operations and file passage relationships.

3.2 Layouts

3.2.1 files

3.2.1.1 input

The two files (Staff and Student/Program) from the SORTKEY program are input to the program.

3.2.1.2 output

The output from this program is the MISVE data base; Appendix A illustrates the structure of the data base.

3.2.1.3 report

Record counts and structural error messages are listed.

3.3 Control Switches

No special control switches or other parameters are needed to execute this program.

3.4 Logic Flow Diagram

The logic flow for the LOAD program appears in Figure 7.

3.5 Processing

3.5.1 program features

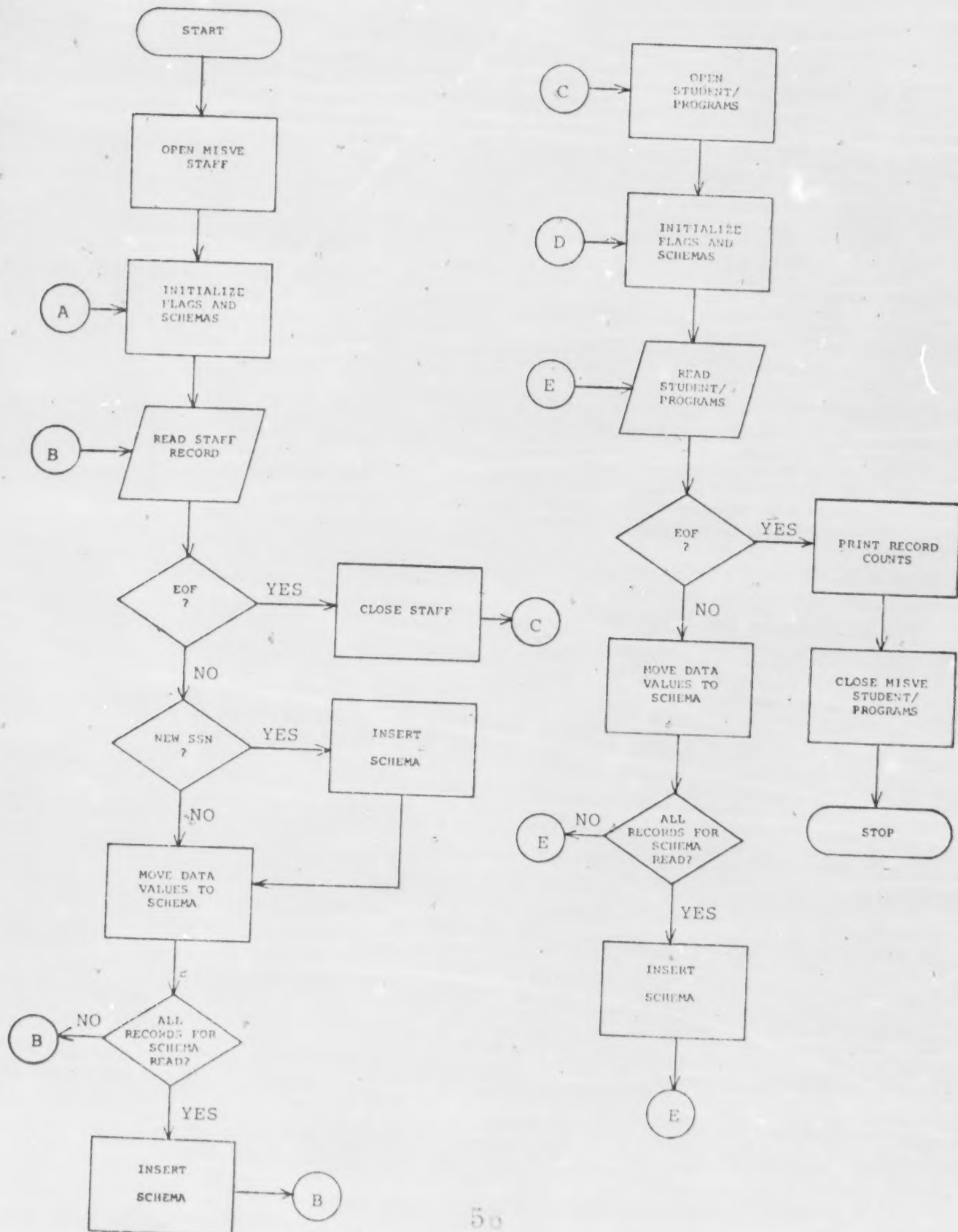
The program is standard COBOL with SYSTEM 2000 Program Language Interface incorporated.

3.5.2 program execution

The two files output by SORTKEY are used as input to the LOAD program. The staff information file is read first and used to create a single logical entry. This is done by reading records, classifying them by type, moving data from the data definitions within the program to the schemas within the program, and inserting these schemas into the data base.

FIGURE 6





The SYSTEM 2000 procedural language interface requires that these insertions be done in an order specified by the SYSTEM 2000 documentation. It is for this reason that the records are sorted according to alphabetical keys in the preceding (SORTKEY) program. In addition to facilitating the SORTKEY sort, the keys are used by LOAD to determine when specific schemas are to be filled and inserted into the data base. This function is made necessary by the fact that information from certain input records (such as the 111A card) is dispersed among multiple schemas. Conversely, certain schemas are made up of information from several different types of records. The alpha codes are used by LOAD to insure that data is properly inserted into the data base. They are, in effect, "bookmarks" which allow the LOAD program to know where it is in the insertion order as it loads each new staff tree.

After inserting all staff data, LOAD closes the STAFF input file and goes through a parallel process to create a second RG for the student/staff requirements logical entry. This portion of the program uses the data from the second file output by SORTKEY.

3.5.3 end-of-job process

3.5.3.1 restart

If there is a machine failure, this job is to be re-run.

4. TABLOAD

The TABLOAD program loads the cross-reference, or translation.

4.1 Flow Diagram

Figure 8, MISVE System Flow for the TABLOAD Program, illustrates the TABLOAD program's sequence of operations and file passage relationships.

4.2 Layouts

4.2.1 files

4.2.1.1 input

The data are in 80 column format. Section III, Key-punch Instructions and Card Layout Formats, found in the "MISVE Source Data Instrument Procedures" document, describes the record layout card input.

4.2.1.2 output

The output for this program is the tables section of the MISVE data base.

4.2.1.3 report

Record counts and error messages are listed.

4.3 Control Information

4.3.1 control switches

No special control switches or other parameters are needed to execute this program.

4.4 Logic Flow Diagram

The logic flow for the TABLOAD program appears in Figure 9.

4.5 Processing

4.5.1 program features

The program is standard COBOL with SYSTEM 2000 Program Language Interface incorporated.

4.5.2 program execution

The TABLOAD program is executed after the LOAD program is executed and the staff and student/program sections of the data base are loaded. Thus, the tables are the last section

FIGURE 8
MISVE SYSTEM FLOW FOR THE TABLOAD PROGRAM

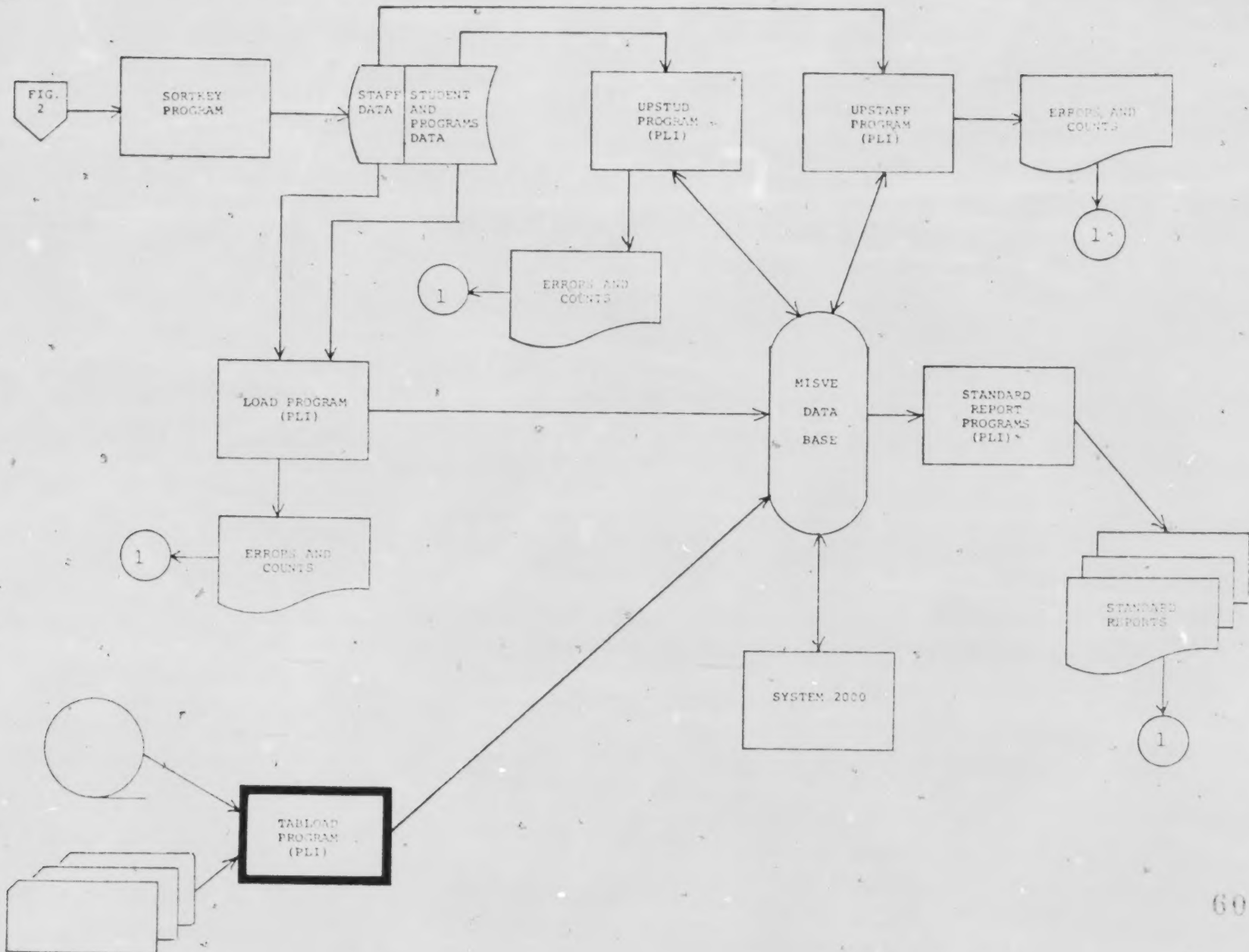
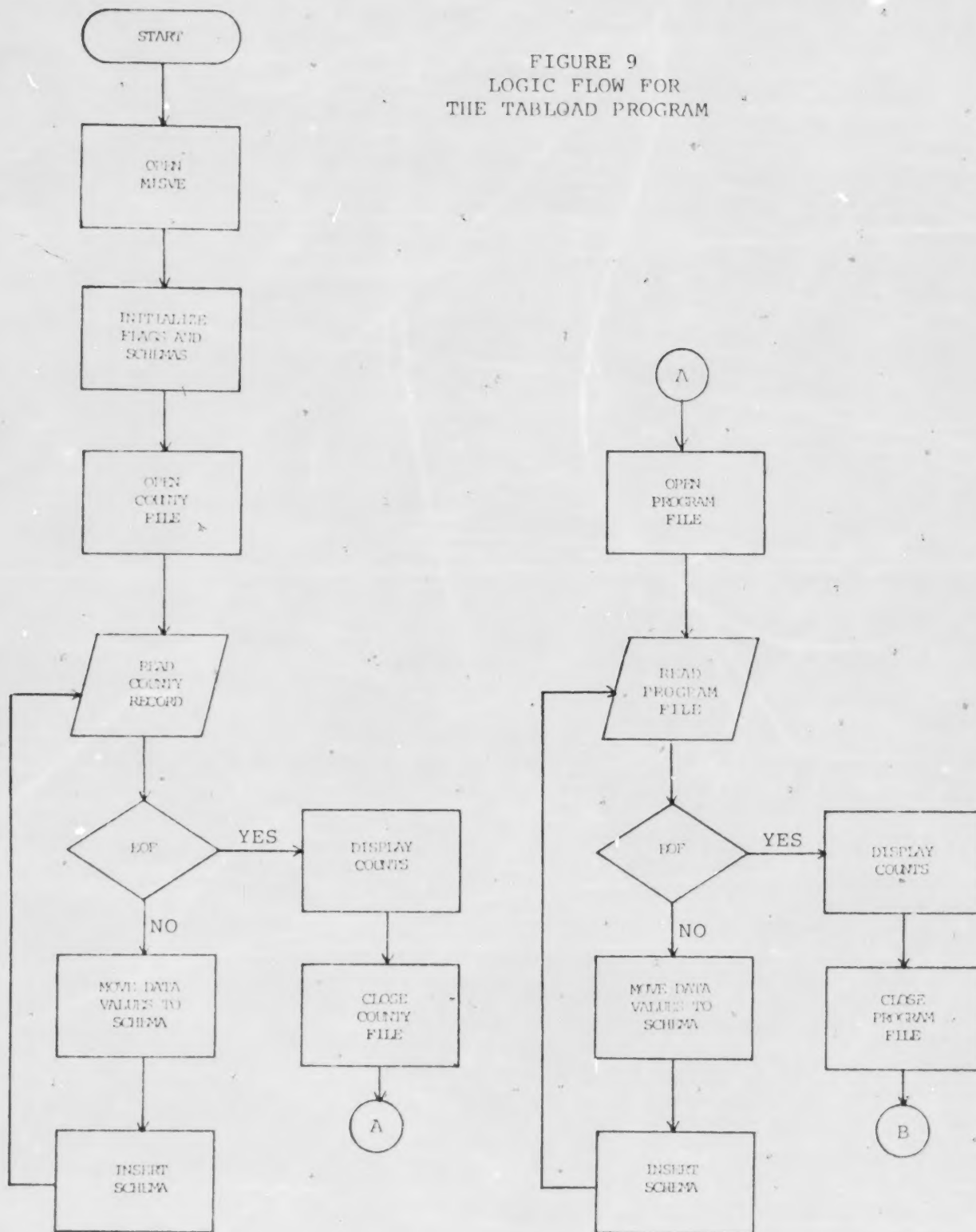
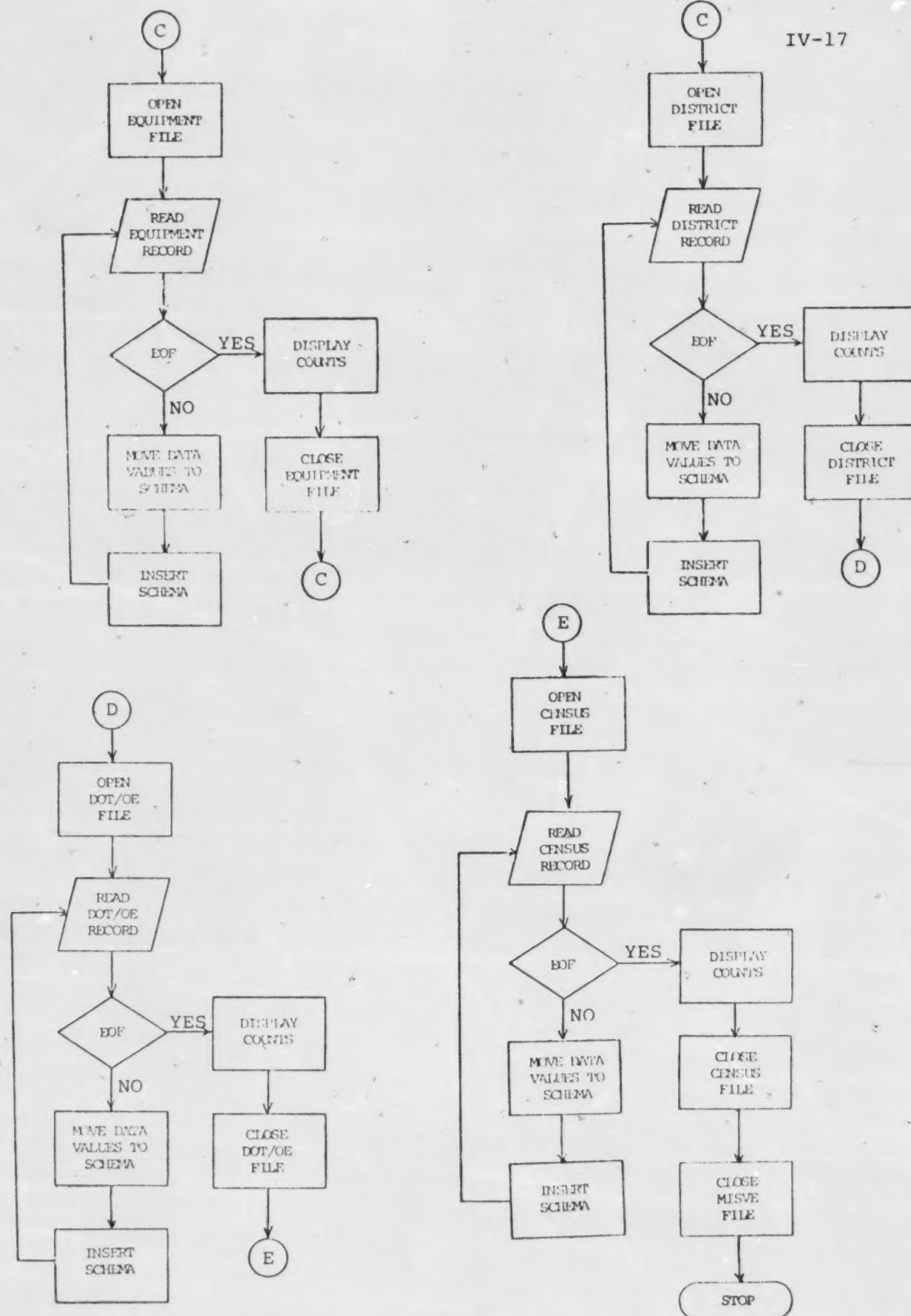


FIGURE 9
LOGIC FLOW FOR
THE TABLOAD PROGRAM





of the data base to be loaded.

Six files are used as input to the TABLOAD program: county number/name file, program code file, census file, equipment/material file, district number/name file, and DOT/OE code file.

The program opens the county file, reads the data, loads it into the data base, and closes the file. The cycle is repeated for each of the other five files in succession.

4.5.3 end-of-job process

4.5.3.1 restart

If there is a machine failure, this job is to be rerun.

5. UPSTAFF (Staff Update)

UPSTAFF is the update program for the staff tree of the MISVE data base. It allows either modification or addition of the staff information (C8) RG, but addition only for the current staff assignments (C134), vocational credential data (C71), and professional improvement data (C122) RGs.

5.1 Flow Diagram

Figure 10, MISVE System Flow for the UPSTAFF Program, illustrates the UPSTAFF program's sequence of operations and file pass relationships.

5.2 Layouts

5.2.1 files

5.2.1.1 input

The only file defined within the program is the input transaction file. This file is created in the same manner as the original load program staff data. It is punched according to the MISVE card layout forms (from MISVE documents 109A, 110A, 110B, 111A, 111B, and 111C) and prepared for input by the MISVE EDIT and SORTKEY programs.

5.2.1.2 reports

None.

5.3 Control Information

5.3.1 control switches

No special control cards are required.

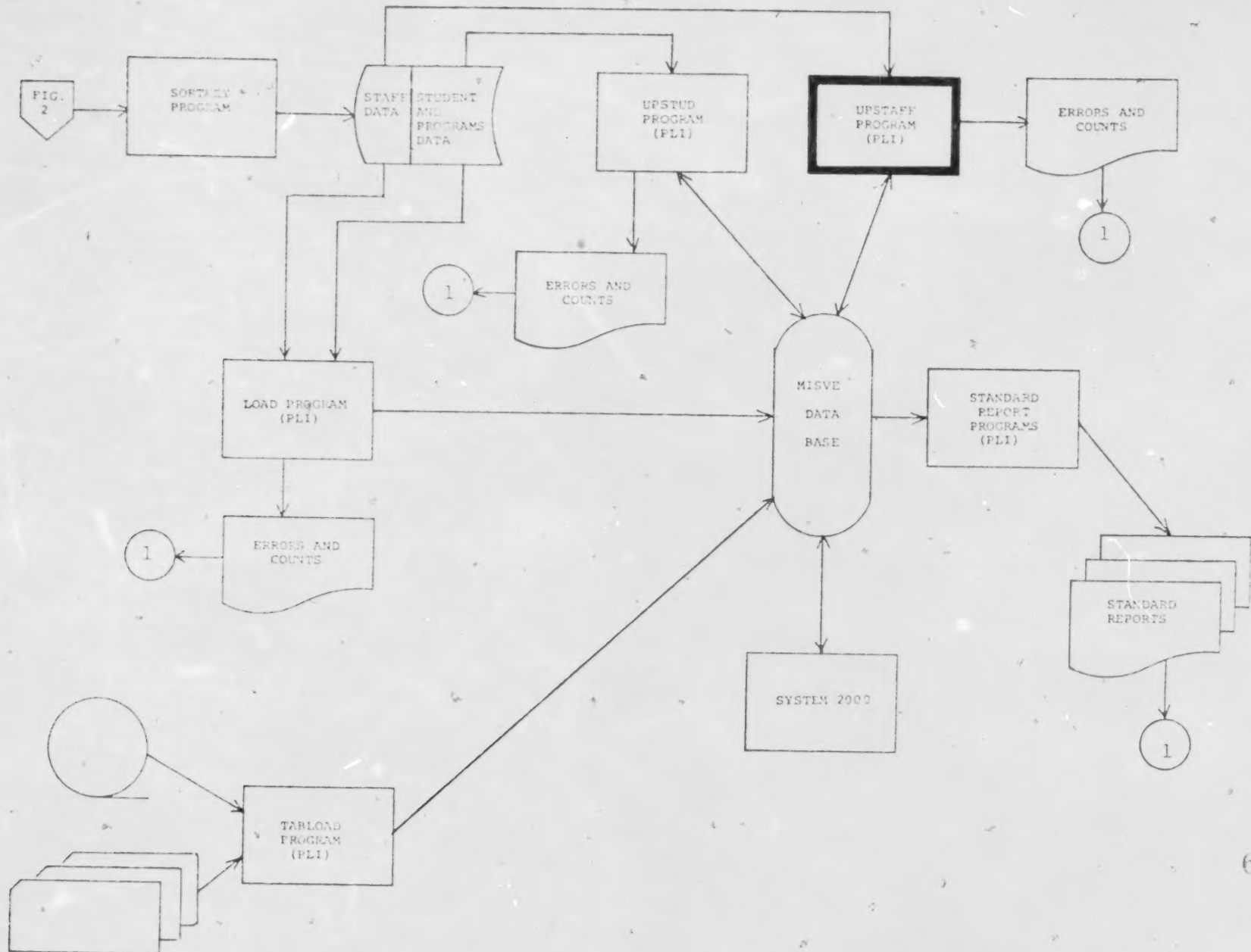
5.4 Logic Flow Diagram

The logic flow for the UPSTAFF program appears in Figure 11.

5.5 Processing

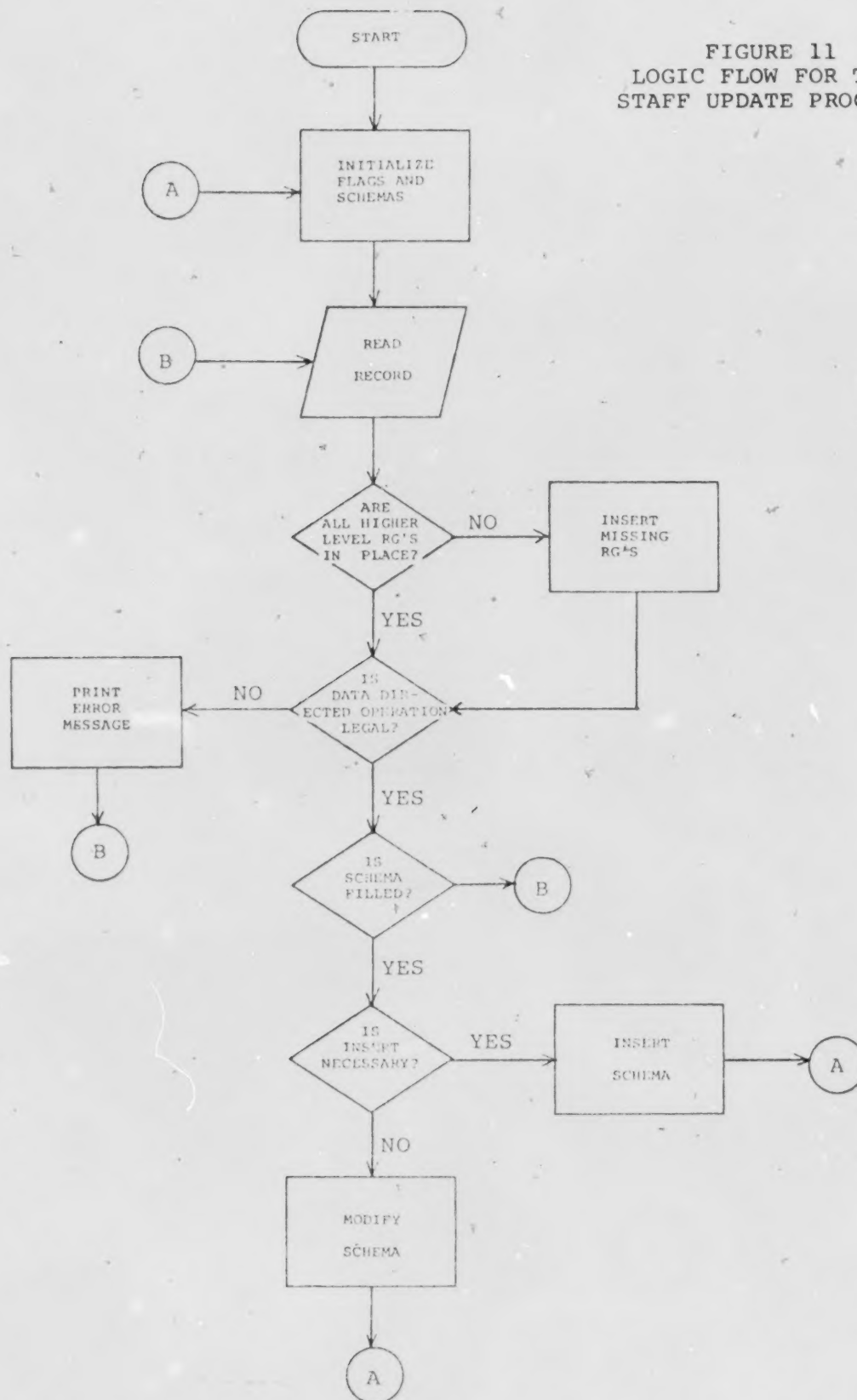
UPSTAFF reads data from the SORTKEY created staff file, checking first for a "new" social security number (SSN). When it finds a SSN, it checks the data base for a matching SSN. If a match is found, all incoming data for the C8 repeating group is used to modify the existing C8 information. If the staff member does not already reside in the data base, a C8

FIGURE 10
MISVE SYSTEM FLOW FOR THE UPSTAFF PROGRAM



IV-20

FIGURE 11
LOGIC FLOW FOR THE
STAFF UPDATE PROGRAM



data set is created and inserted. Data for all other staff repeating groups (C71, C134, and C122) is always used to insert new data sets. This process is repeated for each social security number encountered in the input stream.

5.5.1 special processing conditions

1) Any input for a staff member already in the data which comes from a 109A, 110A, or 111A type input card must be complete insofar as the data for the C8 (STAFF INFORMATION) RG is concerned. The program will take data for the C8 RG from these cards and modify the repeating group. Any such information that is left blank or incorrectly punched on the input cards will cause erroneous data to be put in the data base, or existing correct data to be blanked out.

2) All data for other RGs in the staff tree are used to insert entirely new data sets. That is, for RGs 71, 122, and 134 there is only insertion by UPSTAFF, never modification.

5.5.2 special program messages

1) Message for program interrupt caused by a bad return code from a data base access. This message will supply the point in the program where the problem occurred (BAD-PT), the commblock, the current card image, and the current card number.

2) A successful termination message is output when all updates have been successfully completed. It tells how many cards were processed, how many trees were modified (caused by input data for staff members previously existing in the data base), the number of trees added, and the number of staff members in the input data which could not be processed because their social security numbers already existed more than once in the data base.

3) An error message will be output if the data base cannot be successfully closed.

5.5.3 end-of-job process

5.5.3.1 restart

If the job fails for any reason, correct the problem

and restart from the beginning. If it fails during the terminate phase, the data base is damaged and should be restored from backup before restart.

5.5.3.2 report

The job will display a message indicating successful EOJ if no problems are encountered. It will also display a count of records read.

6. UPSTUD (Student/Programs Update)

UPSTUD is the program to update the student tree of the MISVE data base. Its effects vary between different repeating groups and specific actions are described below under UNUSUAL PROCESSING.

6.1 Flow Diagram

Figure 12, MISVE System Flow for the UPSTUD Program, illustrates the UPSTUD program's sequence of operations and file pass relationships.

6.2 Layouts

6.2.1 files

6.2.1.1 input

Only one file is defined within the program. It is the input transaction file. This file is created in the same manner as the original input student load data. The data is punched according to the MISVE card layouts (for MISVE documents 301A, 301B, 302A, 304, 305, 306, 307, 308A-C, 201, 202, 203, 204, 101, 105, 108, 103A-M, 102A-M) and prepared for input to the UPSTUD program by the MISVE EDIT and SORTKEY programs.

6.2.1.2 reports

None.

6.3 Control Information

6.3.1 control switches

No special control cards or parameters are necessary to execute UPSTUD.

6.4 Logic Flow Diagram

The logic flow for the UPSTUD program is found in Figure 13.

6.5 Processing

6.5.1 switch usage

Fifteen switches are used in the processing logic of UPSTUD. They are made necessary by the complex nature of the input records relationships to the data base. Since updating requires data base retrievals, flags are used to alert the

FIGURE 12
MISVE SYSTEM FLOW FOR THE UPSTUD PROGRAM

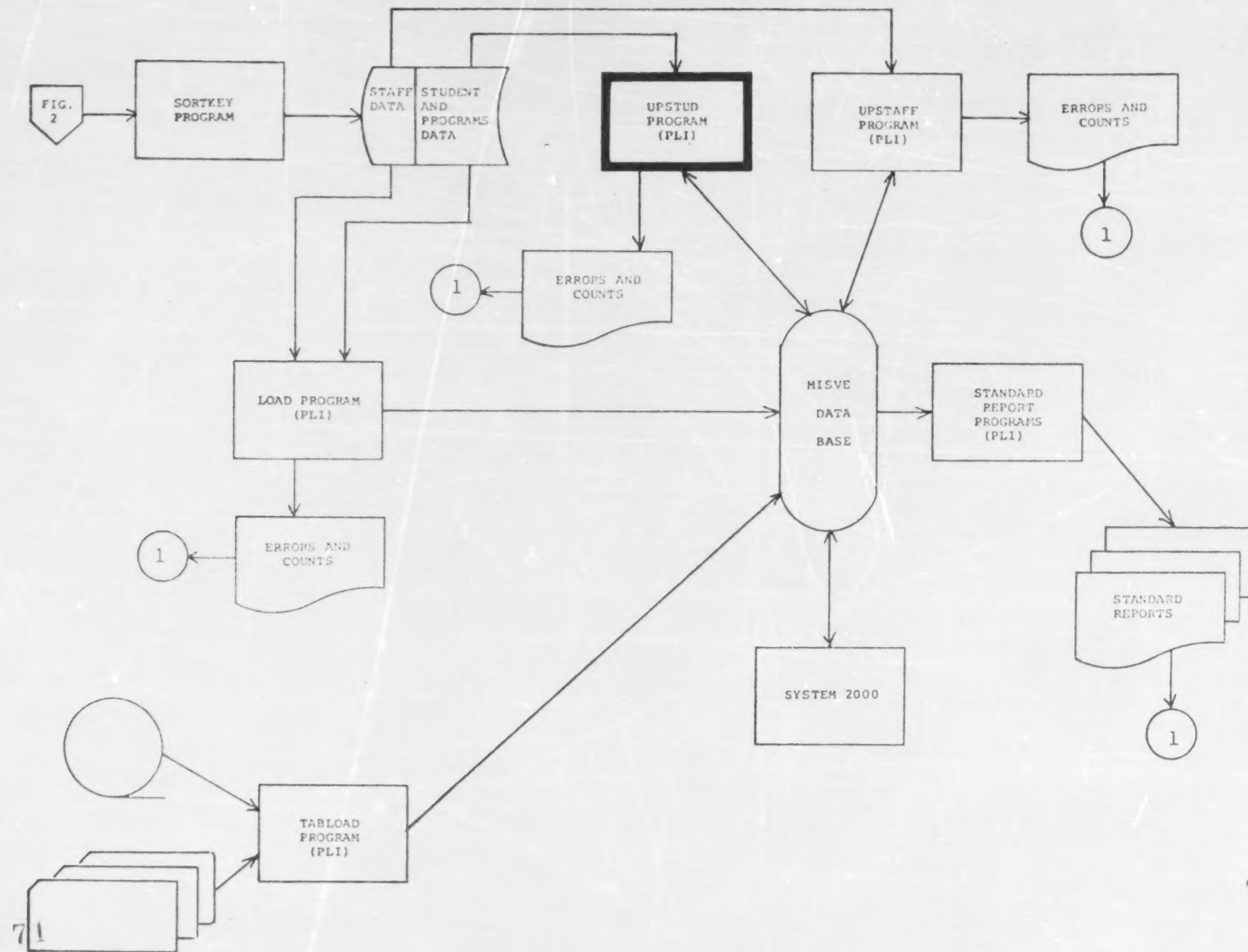
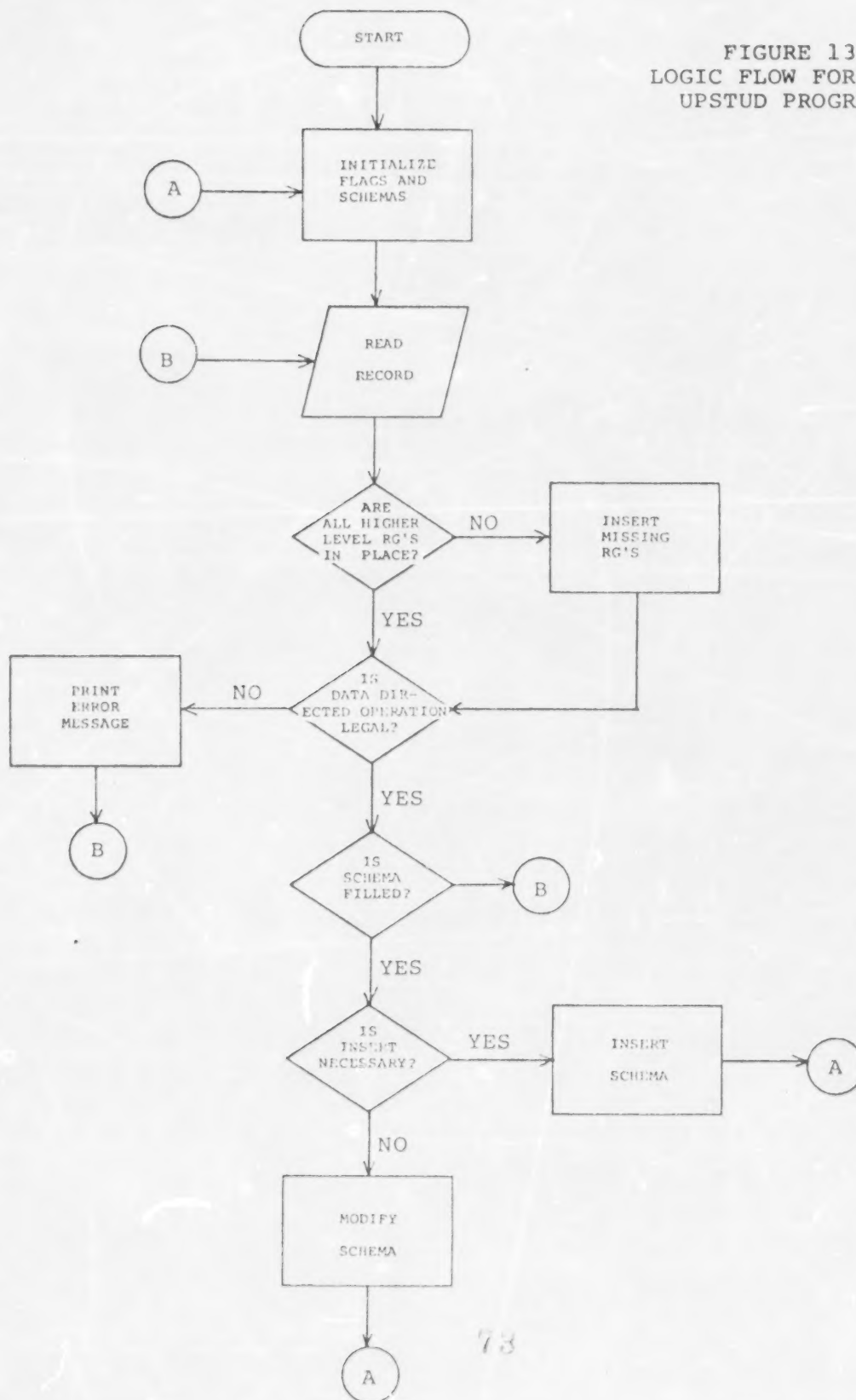


FIGURE 13
LOGIC FLOW FOR THE
UPSTUD PROGRAM

program about which retrieval attempts have been made at any point in processing and the results of these attempts. The flags also insure that a schema requiring data from multiple input records has been furnished with all necessary data before the program attempts insertion or modification.

6.5.2 repeating groups

There are nineteen RG types possible in each student tree. The different types are handled in different ways according to the type of information they contain. The following list details the actions possible for each RG type.

- C185 (DISTRICT DATA) - inserted in nonexistent.
- C227 (PROGRAM CODE DATA) - inserted if nonexistent.
- C239 (PROGRAM APPROVAL NUMBER) - inserted if nonexistent.
- C278 (ENROLLMENT STATUS AND PLACEMENT DATA - INDIVIDUAL) - inserted if nonexistent; else modified.
- C365 (STUDENT FOLLOW-UP) - rejected if the parent C278 RG not in data base, rejected if a C398 already exists; else inserted.
- C398 (SPECIAL NEEDS DATA-INDIVIDUAL) - rejected if parent C278 RG not in data base, rejected if a C365 RG already exists under the affected C278 RG; else inserted.
- C431 (ENROLLMENT - BEGINNING OF TERM) - rejected if C431 RG already exists in data base for the affected C239 parent; else inserted.
- C461 (ENROLLMENT - END OF TERM) - rejected if C461 RG already exists in data base for the appropriate C239 RG parent; else inserted.
- C539 (CHARACTERISTICS OF SPECIAL NEEDS STUDENTS) - same as for C461.
- C584 (PROGRAM COMPLETIONS) - same as for C461.
- C254 (CURRENT AND PROJECTED STAFF REQUIREMENTS) - same as for C461.
- C638 (EQUIPMENT SPECIAL NEEDS & SERVICES DATA) - insert a new data set under the appropriate C239 parent.
- C698 (LOCAL PLAN DATA) - same as for C638.

- C761 (APPLICATION FOR NEW OR CONTINUING PROGRAM)
- rejected if a data set already exists with the same level code (1, 2, or 3) and type code (n or C) under the appropriate C239 parent; else inserted.
- C908 (INSTRUCTIONAL COURSES) - insert under appropriate C761 parent RG.
- C926 (FACILITIES DATA) - same as for C908.
- C947 (POTENTIAL JOBS DATA) - same as for C926.
- C959 (TERMINAL STUDENT PERFORMANCES) - same as for C926.
- C928 (ADVISORY COMMITTEE DATA) - same as for C926.

The UPSTUD program does not perform deletions.

6.5.3 end-of-job process

6.5.3.1 restart

If the job fails for any reason, the job should be restarted at the beginning. If the job fails during the PLI TERMINATE phase, the data base is damaged and should be restored from backup before UPSTUD restart.

6.5.3.2 report

Upon successful completion of the job, UPSTUD will display a message telling how many records were input. If the data base cannot be successfully closed, the program will display an error message and the COMMBLOCK.

APPENDIX B

AN EVALUATION OF DATA BASE MANAGEMENT SYSTEMS

AN EVALUATION OF
DATA BASE MANAGEMENT SYSTEMS

Conducted for

Management Information System
for Vocational Education (MISVE)
Center for Vocational and Technical
Education
Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

Evaluation conducted by:

James J. Fast, Jr.
Consultant
Educational Information Systems
Washington, D.C.

June 29, 1974

Introduction

Prior to 1970, the term Data Base Management System (DBMS) was restricted to the internal conversations of the computer community. Several studies were begun prior to 1970 in an effort to better technically define just what was meant by the term. Today, in 1974, there are innumerable studies, technical papers and informative documents which explain this new approach to developing flexible and user responsive data bases in support of overall Management Information Systems. Many computer users were required to provide flexible services to a number of clients, requiring the use of extensive and unique programming efforts with rather restrictive interactive capabilities. Through the use of a DBMS, it is now possible to provide a variety of user services from central data bases, including flexible input/output formats for both building and querying the data base.

The Center for Vocational and Technical Education at Ohio State University is a user interested in developing a Management Information System which is responsive to a variety of input/output specifications, but at the same time is capable of producing certain comparable reports which can be used for meeting federal requirements. On the basis of an analysis of user requirements, (State Departments of Vocational Education) a set of specifications were developed for the development of the Management Information System for Vocational Education (MISVE). From these specifications, it was determined that the most cost-effective

method of developing the computer software necessary to operate such a system was to purchase a commercially available Data Base Management System. The following report represents the results of a study conducted for CVTE in order to determine the best commercially available DBMS in order to meet the MLSVE specifications.

I. Evaluation Methodology

In order to determine the most effective, commercially available DBMS, the MISVE specifications were used as the sole source of performing the evaluation. These specifications are contained in a document titled Outcome Specifications, MISVE, Computer Support System dated June 6, 1974. These were summarized for ease of use on the following chart.

A. Candidate Systems

As previously indicated, there are now a number of documents and technical reports which list and describe the various Data Base Management Systems. It is estimated that over 200 systems could qualify, but only about 50 contain all of the requirements. In order to select the candidate systems best qualified for MISVE, two major resources were used:

- A Technical Index of Interactive Information Systems, NBS Technical Note 819, published by the National Bureau of Standards, March 1974.
- Data Management Systems Catalog, published by the MITRE Corporation, January, 1973.

Additional resources used for identifying potential candidate systems included the Data Management Software Reports published by Auerbach Corporation and the preliminary DBMS matrix developed by Booze Allen and Hamilton for CVTE as part of their previous contract.

B. Comparative definitions and terminology

It was obvious that some standard definitions and terminology needed to be used in order to make comparisons between candidate

systems. The following served as this guide:

- Feature Analysis of Generalized Data Base Management Systems, CODASYL Systems Committee Technical Report, May, 1971.

Additional information, relative to terminology and DBMS features, came from The Technology of Data Base Management Systems, published by College Readings Inc., June, 1974.

C. Evaluation procedures

Given the factors of time (two weeks) and available funds for evaluation purposes, it was impossible to conduct an independent and intensive review of available DBMS's. Therefore, it was necessary to take advantage of previous work done by others seeking answers to the same question. Two major studies were used:

- Regulatory Information System, conducted by Planning Research Corporation for the Federal Power Commission (FPC).
- Data Management Systems Study, Survey of Existing Data Management Systems, conducted by Bradford Computer and Systems, Inc. for the Department of Health, Education and Welfare.

It was also considered appropriate that studies conducted in an education environment be referenced if possible. Two documented studies were located; one conducted by the Council of the Great City Schools; the second conducted by the University of Indiana. (The latter study was presented at the 19th Annual College and University Machine Records Conference, May 5-8, 1974, Baylor University and was titled: Data Base Management System Selection Procedure.)

As described in Section II of this report, it was necessary to use an evaluation procedure that was able to be conducted within the given time frame and at the same time withstand the tests of

scrutiny. A method called Fatal Flaw analysis was finally selected, the discriminators used in the analysis described in the tables in Section 11. It should be pointed out that research indicated that the PRC feature analysis study conducted for the Federal Power Commission took in the neighborhood of fifty man-months to complete, while a benchmark analysis currently being conducted by U.S. Geological Survey will require approximately thirty man-months to complete. These methods were not considered, once these factors were known.

In order to determine the systems that would be given a final analysis, all systems listed in the NBS Technical Note 819 were examined. The primary general selection criteria, for this selection, were that the system be nationally recognized (not a one-of-a-kind, regardless of how sophisticated), that it operate on as many hardware configurations as possible and that at least one system for each major hardware configuration be selected. As can be seen from the tables, eighteen systems were selected for a final evaluation. It was simply impossible to evaluate all of the systems. There had to be certain judgements relative to the final selection. However, based on the number of systems selected and the number of users this represents, it can be stated quite confidently that this list represents the best systems which potentially could meet the MISVE specifications.

II. Technical Evaluation

Evaluation of Data Base Management systems can take three forms. The fatal flaw analysis method is used when there is a short time frame. It can also be used when the criteria against which systems are evaluated are well known and have great discriminatory value.

Implementation of the fatal flaw method takes the following form:

1. Establish criteria
2. Sort criteria by discriminatory value
3. Examine candidate systems
4. Determine winner.

If there exists more than one winner, then more discriminators need to be developed or the second method of evaluation has to be involved.

A second method, which may be used as a stand alone, or in conjunction with the first, is the Feature Analysis method. This method employs a list of factors by which to judge DMS's. Evaluations are then made against these criteria. The raw scores are first normalized. Weighting factors are next determined, and then the normalized scores are multiplied by the weighting factors. These normalized and weighted scores are added together to determine the system with the highest score. While this method is objective, and comprehensive, it takes a great deal of time.

A third method may also stand alone or be used with the other two. It is the benchmark method. Each candidate system has to be procured (or borrowed?), loaded onto a computer and run against a standard set of data with a standard set of tasks. While this method is the most objective, it requires the maximum amount of time and money.

The evaluation method that most readily conforms to the time frame available is the fatal flaw analysis. The criteria which were provided in the Outcome Specifications, MISVE Computer Support System document dated June, 1974, provide adequate discriminators. Specifically, the following items were immediately examined.

1. Adaptable to different operating environments, and be compatible with readily available data processing hardware produced by major hardware manufacturers. (Pg. 2)
2. Complete user oriented on-line time sharing system. (Pg. 3)
3. Multiple (host) language usage including COBOL, FORTRAN, PL/I, and possibly BASIC. (Pg. 3)
4. Results of DBMS assessments conducted by governmental agencies and educational groups. (P. 5)
5. User experiences with candidate DBM's in educational settings. (Pg. 5)
6. Data independence. (Pg. 6)
7. Capacity of the files. (Pg. 7)
8. Data definition and file creation. (Pg. 9)
9. Data retrieval languages. (Pg. 9)
10. Report Writer. (Pg. 10)
11. Response time. (Pg. 11)
12. Sequential file processor. (Pg. 11)

Of the twelve discriminators, only numbers four, and five were not immediately examined. The sources for candidate systems were the Booz Allen Hamilton Study dated June, 1974 (Attachment 1), the Mitre data management systems catalog dated January, 1973, and the NBS Technical Note 819, dated March, 1974.

Table 1

SYSTEMS ORGANIZED BY HARDWARE ENVIRONMENT

System Name	Burroughs	CDC	Honeywell	IBM	Univac
Adabas				X	
Data Central				X	
Disk Forte	X				
DMS 1100					X
GIM				X	X
IDS			X		
IMS/GIS				X	
Inquire				X	
Mark II				X	
MARS VI		X			
Model 204				X	
Quick Query		X	X	X	X
Ramis				X	
Score	X	X		X	X
SIRS				X	
System 2000		X		X	X
Total				X	
Unidata		X			

Multiple Vendor Systems

Quick Query - CDC, Honeywell, IBM, Univac

Score - Burroughs, CDC, IBM, Univac

System 2000 - CDC, IBM, Univac

GIM - IBM, Univac

Source: Data Management Systems Catalog
 The MITRE Corporation
 January, 1973

Table 2

ON-LINE SYSTEMS

On-Line System Names	Hardware System				
	Burroughs	CDC	Honeywell	IBM	Univac
Adabas				X	
Data Central				X	
DS/3				X	
GIM				X	X
IMS/GIS				X	
Inquire				X	
Mark IV				X	
MARS VI		X			
Ramis				X	
System 2000		X		X	X
Unidata		X			

Multiple Vendor Systems that are on-line

Source:

System 2000 - IBM, CDC, Univac
 GIM - IBM, Univac

NBS Technical Note 819
 National Bureau of
 Standards
 March, 1974

Table 1 presents the results of the first discriminator. As can be seen, four systems qualify as multiple vendor systems. They are: Quick Query, Score, System 2000, and GIM.

Table 2 presents the results from the second discriminator by examining systems that are considered by the National Bureau of Standards to be on-line systems. Of the systems that are both on-line and multi-vendor, there exists only two, GIM and System 2000.

Table 3 presents the results from discriminators three, nine, ten, and twelve. The only two systems that fulfill these four discriminators are IMS/GIS, and System 2000.

Table 4 presents the results from a comparison of data structure evaluations. Table 5 also deals with the resultant storage structures. Table 6 was copied directly from The Technology of Data Base Management Systems, June, 1974. Table 6 indicates that to satisfy the response time requirement of discriminator eleven and the capacity of files from discriminator seven, then the file organization has to be either inverted or hash coded. The systems that satisfy the discriminator are Adabas, Data Central, GIM, IMS/GIS, Inquire, MARS VI, Model 204, System 2000, and Unidata.

Discriminator six, data independence, indicates that the file structure has to be either linear or hierarchical. The systems that satisfy that discriminator directly are Inquire, Mark IV, MARS VI, SIRS, System 2000, and Unidata.

A summary of the discriminator evaluations by system shows that System 2000 is the only system that satisfies all discriminator passes.

Table 3
SYSTEMS BY LANGUAGE INTERFACES

Software System	Host	Language Interfaces			
		Self-Contained Processing for			
		Query	Update	Report Writer	Sequential File
Adabas	X	X	X		
Data Central	X	X			
Disk Forte	X				
DMS 1100	X				
GIM		X	X		
IDS	X				
IMS/GIS	X	X	X	X	X
Inquire		X	X		
Mark IV		X	X	X	
MARS VI		X	X	X	
Model 204	X	X	X	X	
Quick Query		X		X	
Ramis		X	X	X	
Score				X	
SIRS		X		X	
System 2000	X	X	X	X	X
Total	X				
Unidata		X	X		

Complete Systems: IMS/GIS, System 2000

Source: Data Management Systems Catalog
MITRE Corporation, 1973

Table 4

SYSTEMS BY DATA STRUCTURES

System	Data Structures		
	Linear	Hierarchical	Networks
Adabas	X	Z	Z
Data Central	X		
Disk Forte	X	Z	Z
DMS 1100	X	Z	Z
GIM	X	Z	Z
IDS	X	Z	Z
IMS/GIS	X	Z	Z
Inquire	X	Z	Z
Mark IV	X	X	Z
MARS VI	X	X	Y
Model 204	X	Z	Z
Quick Query	X		
Ramis	X	Z	Z
Score	X		
SIRS	X	X	Z
System 2000	X	X	Y
Total	X	Z	X
Unidata	X	X	

- X - indicates that the structure is directly possible
 Y - indicates that the structure is easily derivable by a nontechnical user
 Z - indicates that the structure is achievable but that highly skilled personnel must be employed

Table 5

SYSTEM BY STORAGE ARCHITECTURE

B-14

Software System	Primary Method of Storage Structure Architecture				
	Sequential	Indexed Sequential	Chained Records	Inverted	Hash/Randomizing
Adbas				X	
Data Central				X	
Disk Forte	X	X	X		
DMS 1100			X		
GIM					X
IDS			X		
IMS/GIS		X			X
Inquire				X	
Mark IV		X			
MARS VI				X	
Model 204				X	
Quick Query	X				
Ramis			X		
Score		X			
SIRS		X			
System 2000				X	
Total				X	
Unidate				X	

Source: MITRE - DMS Catalog
January, 1973

Table 6

SUITABILITY OF THE FILE ORGANIZATIONS

File Organization	Traffic Volume	Response Time Requirement	File Size	Entry Length	Search File
Sequential	Low	Overnight and time available	Applicable to any number	Applicable to any length	None
Chaining	Low to medium	Rapid, Overnight and Time Available	Small to medium	Long	None
Branch Structured	Medium	Applicable to any response requirement	Medium	Medium to long	Required
Binary Search	High	Immediate and rapid	Small	Small to medium	None
Inverted	Medium to high	Immediate and rapid	Applicable to any number	Applicable to any length	Required
Content Structured	Medium	Rapid	Small to medium	Medium to long	None
Hash	High	Immediate	Medium to large	Medium to large	None

Traffic Volume:

Low - 1 event/second
 Medium - 2 to 9 events/second
 High - 10 events/second and above

Response Time:

Immediate - 3 to 5 seconds
 Rapid - same day
 Overnight - 24 hours
 Time Available - greater than 24 hours

File Size (No. of entries per file)

Small - 10K entries or less
 Medium - 11K to 99K
 Large - 1M and above

Entry Length:

Short - less than 50 characters
 Medium - 50 to 199 characters
 Long - 200 characters and above

Table 7
SUMMARY OF DISCRIMINATION PASSES

Systems	Table Numbers				
	1	2	3	4	5
Adabas				X	
Data Central				X	
Disk Forte					
DMS 1100					
GIM	X	X		X	
IDS					
IMS/GIS			X	X	
Inquire				X	X
Mark IV					X
MARS VI				X	X
Model 204				X	
Quick Query	X				
Ramis					
Score	X				
SIRS					X
System 2000	X	X	X	X	X
Total					
Unidata				X	X

III. Summary and Conclusions

The results of the technical analysis indicated that System 2000, marketed by MRI Systems Corporation, Austin, Texas, was the only DBMS which met the MISVE specifications. As called for in the specifications, the selected system must be examined in terms of its operation in an educational environment: a quick survey indicated that the Council of the Great City Schools selected System 2000, through a feature analysis evaluation, to operate in the PMIS project conducted in cooperation with the Dallas Independent School District. The project (PMIS) is no longer in operation, but the DBMS approach to computer maintenance of the records still uses System 2000.

A call to the University of Indiana indicated that System 2000 has been successfully operating since December, 1973. A combination feature analysis/benchmark evaluation procedure was used, with the three final selections operating on the system for three months for final validation. System 2000 was the selection and according to personnel is trouble free, operating with no programmer maintenance and is fully supported by the vendor.

System 2000 has also been selected by a number of federal agencies and calls to each produced a favorable response. In most instances, all indicated that it was performing above expectations. Representatives of the following agencies were contacted concerning the performance of System 2000 and of MRI Systems Corporation:

- Department of Housing and Urban Development
- U.S. Department of Commerce
- U.S. Department of Agriculture
- Environmental Protection Agency
- U.S. Army
- U.S. Navy

Based on the technical analyses and the subsequent responses from users, who had all conducted extensive and costly feature analyses and/or benchmark evaluations, System 2000 seems, at this point in time, to be the most logical DBMS for meeting MISVE objectives.

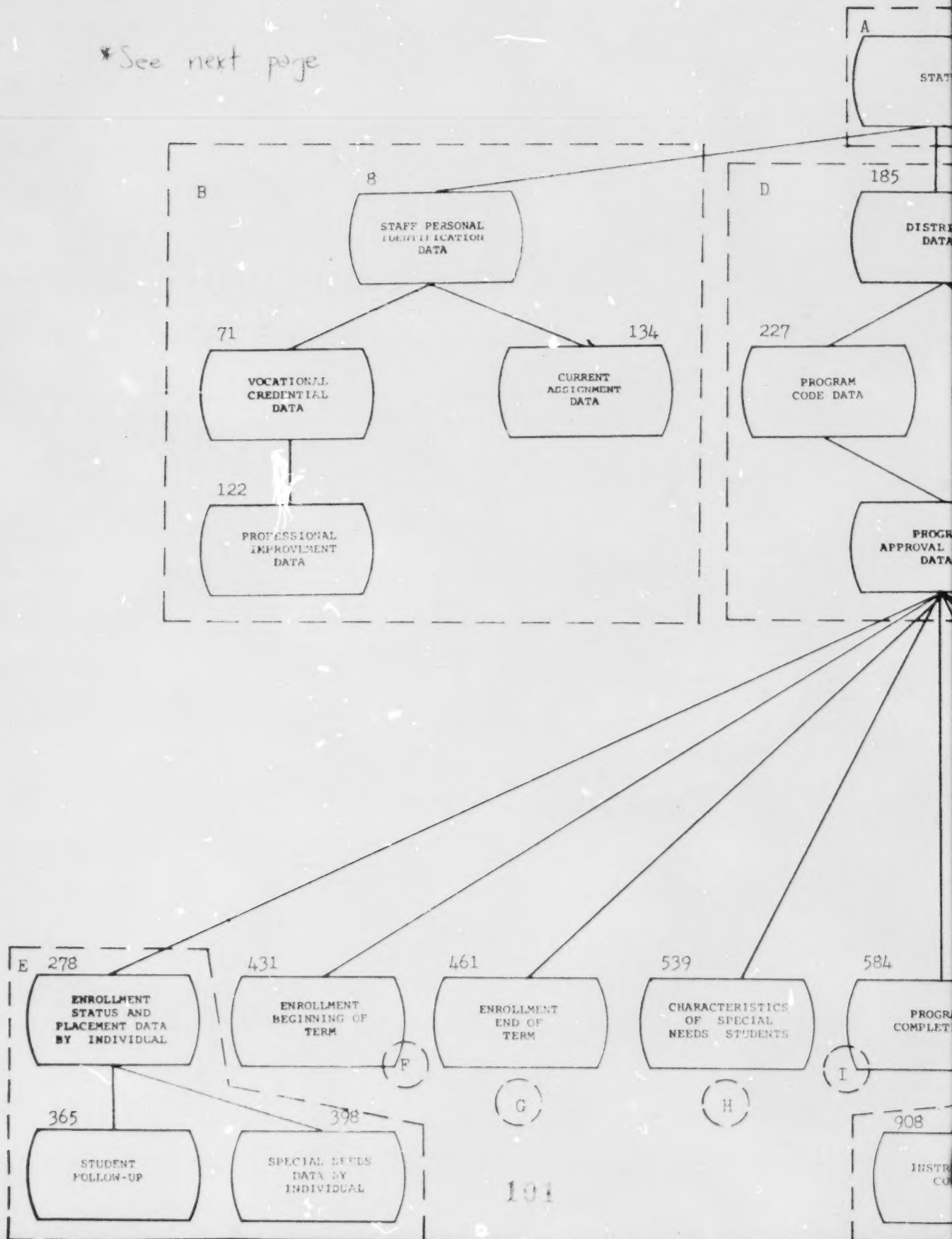
APPENDIX C

MISVE DATA BASE TREE STRUCTURE
BROKEN INTO UNITS

APPENDIX D

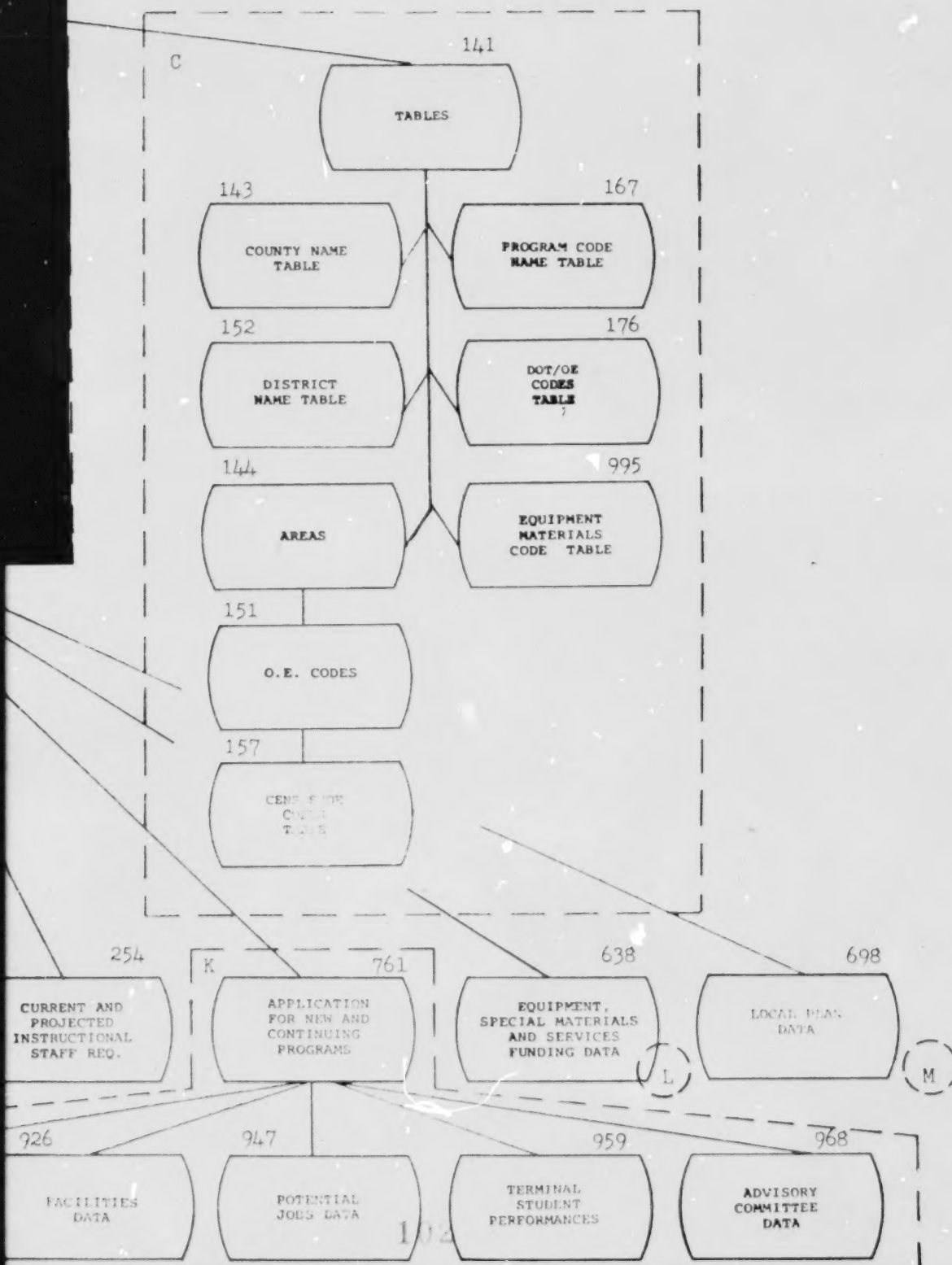
MISVE DATA BASE DEFINITION

*See next page



MISVE DATA BASE TREE STRUCTURE BROKEN INTO UNITS

C-1



```

USER,STRR:
DBN IS MISVE:
CONTROL: RELEASE:
NEW DATA BASE IS MISVE/380:
STOP AFTER SCAN IF ANY ERRORS OCCUR:
5* STATE IDENTIFICATION (NAME XX):
6* ENTRY-DATE (DATE):
8* STAFF INFORMATION (RG):
11* STAFF LAST NAME (NAME X(11) IN 8):
14* STAFF FIRST NAME (NAME X(10) IN 8):
17* STAFF MIDDLE INITIAL (NAME X IN 8):
20* STAFF SOCIAL SECURITY (NAME X(11) IN 8):
23* STAFF LEVEL CODE (INTEGER NUMBER 9 IN 8):
26* STAFF DISTRICT (INTEGER NUMBER 9(8) IN 8):
65* STAFF SEX (NAME X IN 8):
68* STAFF AGE (NON-KEY INTEGER NUMBER 99 IN 8):
71* STAFF VOC CREDENTIAL INFO (RG IN 8):
74* STAFF VOC CREDENTIAL HELD (NAME X IN 71):
77* STAFF TYPE TEACHING CERTIFICATE (NAME X IN 71):
80* STAFF GOV JOB CERTIFICATE (NAME X IN 71):
83* STAFF INSTITUTION (NAME X(10) IN 71):
86* STAFF EXPIRATION YEAR (INTEGER NUMBER 99 IN 71):
89* STAFF RENEWAL CONDITIONS (NAME X IN 71):
92* STAFF OCCUPATIONAL EXPERIENCE (INTEGER NUMBER 999 IN 71):
95* STAFF TEACHING EXPERIENCE (INTEGER NUMBER 999 IN 71):
98* STAFF TOTAL YRS OF EDUCATION (NON-KEY INTEGER NUMBER 99 IN 71):
99* STAFF SEMINAR HOURS (NON-KEY INTEGER NUMBER 999 IN 71):
100* STAFF WORK EXPERIENCE (NON-KEY INTEGER NUMBER 999 IN 71):
101* STAFF HIGHEST DEGREE EARNED (NAME X IN 71):
104* STAFF COURSE WORK FOR RENEWAL (NON-KEY INTEGER NUMBER 99 IN 71):
107* STAFF APPLICATION DATE (NON-KEY DATE IN 71):
109* STAFF ADDRESS (NON-KEY NAME X(20) IN 71):
110* STAFF CITY (NON-KEY NAME X(15) IN 71):
113* STAFF STATE (NON-KEY NAME XX IN 71):
116* STAFF ZIP CODE (NON-KEY INTEGER NUMBER 9(5) IN 71):
119* STAFF TELEPHONE NO (NON-KEY NAME X(12) IN 71):
122* STAFF VCI PROGRAMS (RG IN 71):
125* STAFF PROGRAM AREA (NAME XX IN 122):
128* STAFF PROGRAM LEVEL (INTEGER NUMBER 9 IN 122):
131* STAFF TIME IN PROGRAM (INTEGER NUMBER 9 IN 122):
134* STAFF PROGRAMS (RG IN 8):
29* STAFF COURSE WORK HOURS COMPLETED (INTEGER NUMBER 99 IN 134):
32* STAFF SEMINAR WORK SHOPS ATTENDED (INTEGER NUMBER 99 IN 134):
35* STAFF SEMINAR HOURS PARTICIPATED (INTEGER NUMBER 999 IN 134):
38* STAFF SEMINAR WORK EXPERIENCE (INTEGER NUMBER 999 IN 134):
39* STAFF POSITION CODE (NAME X IN 134):
41* STAFF SEMINAR ADVISOR VOC STUD URG CHK (NON-KEY NAME X IN 134):
137* STAFF PROGRAMS NO 1 (INTEGER NUMBER 9(6) IN 134):
138* STAFF PROGRAM NO 2 (INTEGER NUMBER 9(6) IN 134):
139* STAFF PROGRAM NO 3 (INTEGER NUMBER 9(6) IN 134):
141* TABLES (RG):

```

142* TABLE ID (NAME X(10) IN 141):
 143* COUNTY NAMES (RG IN 141):
 146* COUNTY (NON-KEY NAME X(15) IN 143):
 149* COUNTY NUMBER (NON-KEY INTEGER NUMBER 999 IN 143):
 144* AREAS (RG IN 141):
 147* REG CODE (NAME XX IN 144):
 151* DE CODEX (RG IN 144):
 153* DE NUMBER (NAME X(6) IN 151):
 156* DE TITLE (NAME X(71) IN 151):
 157* CENSUS (RG IN 151):
 163* CEN CODE (NAME XXX IN 157):
 166* CEN TITLE (NAME X(65) IN 157):
 168* CEN CUR DEMAND (INTEGER NUMBER 9(6) IN 157):
 171* CEN PROJ DEMAND (INTEGER NUMBER 9(6) IN 157):
 152* DISTRICTS (RG IN 141):
 155* DISTRICT (NAME X(20) IN 152):
 158* DISTRICT NO (INTEGER NUMBER 999 IN 152):
 161* COUNTY CODE (INTEGER NUMBER 999 IN 152):
 164* REGION (INTEGER NUMBER 99 IN 152):
 165* DISTRICT CODE (INTEGER NUMBER 9(8) IN 152):
 167* DE PROGRAMS (RG IN 141):
 170* DE PROGRAM (NAME X(20) IN 167):
 173* DE PROGRAM NUMBER (INTEGER NUMBER 9(6) IN 167):
 176* DOT CODES (RG IN 141):
 179* DOT (NAME X(50) IN 176):
 182* DOT CODE (INTEGER NUMBER 9(9) IN 176):
 1820* DE CODE (NAME X(9) IN 176):
 1821* DE PROGRAM FIELD (NAME XX IN 176):
 1822* DE PROGRAM SUBFIELD (NAME X(6) IN 176):
 1823* DE CURRENT DEMAND (INTEGER NUMBER 9(6) IN 176):
 1824* DE PROJECTED DEMAND (INTEGER NUMBER 9(6) IN 176):
 995* EQUIPMENT MATERIALS (RG IN 141):
 997* EQUIPMENT CODE (NAME X(12) IN 995):
 999* EQUIPMENT DESCRIPTION (NON-KEY NAME X(40) IN 995):
 185* DISTRICT INFORMATION (RG):
 188* DIST CODE (INTEGER NUMBER 9(8) IN 185):
 191* DIST EDUCATIONAL PLANNING REGION (INTEGER NUMBER 99 IN 185):
 194* DIST COUNTY NUMBER (INTEGER NUMBER 999 IN 185):
 197* DIST DISTRICT NUMBER (INTEGER NUMBER 999 IN 185):
 200* DIST STAFF REQ (RG IN 185):
 203* DIST POSITION CODE (NAME X IN 200):
 206* DIST CYCLE CODE (NAME X IN 200):
 209* DIST CYCLE YEAR (INTEGER NUMBER 99 IN 200):
 212* DIST FULL TIME (NON-KEY INTEGER NUMBER 99 IN 200):
 215* DIST PART TIME (NON-KEY INTEGER NUMBER 99 IN 200):
 218* DIST FTE PERSONS (NON-KEY DECIMAL NUMBER 999.9 IN 200):
 221* DIST POSITION COSTS (NON-KEY INTEGER NUMBER 9(6) IN 200):
 224* DIST POSITION NAME (NAME X(25) IN 200):
 227* PROGRAM INFORMATION (RG IN 185):
 230* PROGRAM CODE (INTEGER NUMBER 9(6) IN 227):
 233* PROGRAM FIELD (INTEGER NUMBER 99 IN 227):
 236* INDIVIDUAL PROGRAMS (INTEGER NUMBER 9999 IN 227):
 237* DE PROGRAM NAME (NAME X(20) IN 227):
 239* PROGRAM APPROVAL NO INFORMATION (RG IN 227):
 242* PROGRAM APPROVAL NO (INTEGER NUMBER 9(6) IN 239):
 245* PROGRAM LEVEL (INTEGER NUMBER 9 IN 239):
 248* PROGRAM TYPE (INTEGER NUMBER 9 IN 239):
 251* PROG APP NO (INTEGER NUMBER 9999 IN 239):

254* STAFF REQUIREMENTS (RG IN 239):
 257* STAFF POS CODE (NAME X IN 254):
 260* STAFF CYCLE CODE (NAME X IN 254):
 263* STAFF YEAR (INTEGER NUMBER 99 IN 254):
 266* STAFF FULL TIME (NON-KEY INTEGER NUMBER 99 IN 254):
 269* STAFF PART TIME (NON-KEY INTEGER NUMBER 99 IN 254):
 272* STAFF FTE PERSONS (NON-KEY DECIMAL NUMBER 99.99 IN 25)

4):

275* STAFF POSITION NAME (NAME X(25) IN 254):
 278* STUDENT INFORMATION (RG IN 239):
 281* STUD LAST (NON-KEY NAME X(15) IN 278):
 284* STUD FIRST NAME (NON-KEY NAME X(10) IN 278):
 287* STUD MIDDLE INITIAL (NON-KEY NAME X IN 278):
 288* STUD GRADE (NAME X IN 278):
 289* STUD DISTRICT DIFF (INTEGER NUMBER 9(8) IN 278):
 290* STUD SOCIAL SECURITY NUMBER (NON-KEY NAME X(11) IN 27

P):

293* STUD SEX (NAME X IN 278):
 296* STUD ETHNIC GROUP (NAME X IN 278):
 299* STUD AGE (NON-KEY INTEGER NUMBER 99 IN 278):
 302* STUD WAGE (DECIMAL NUMBER 99.99 IN 278):
 305* STUD OBJECTIVE (NAME X IN 278):
 308* STUD ED PLAN (NAME X IN 278):
 311* STUD EMPLOYMENT (NAME X IN 278):
 314* STUD BIRTHDATE (DATE IN 278):
 317* STUD HANDICAPPED - DISADVANTAGED (NAME X IN 278):
 320* STUD PRIM HANDICAPPED (NAME X IN 278):
 323* STUD PRIM DISADVANTAGED (NAME X IN 278):
 326* STUD BLDG NO (INTEGER NUMBER 999 IN 278):
 329* STUD INST COMP FORM (NAME X(16) IN 278):
 332* STUD STATUS UNKNOWN (NAME X IN 278):
 335* STUD EMPLOYMENT AVAILABILITY (NAME X IN 278):
 338* STUD EMPLOYMENT STATUS (NAME X IN 278):
 341* STUD SCHOOL TEACHER TRYING TO PLACE (NAME X IN 278):
 344* STUD MAJOR REASON NT PLACED (NAME X IN 278):
 347* STUD COOP WORK EXPERIENCE (NAME X IN 278):
 350* STUD VOCATIONAL ORG (NAME X IN 278):
 353* STUD DROPPED PROGRAM (NAME X IN 278):
 359* STUD COMP PROGRAM CHECK (NAME X IN 278):
 362* STUD WITHDRAW CHECK (NAME X IN 278):
 363* STUD CURRENTLY ENROLLED (NAME X IN 278):
 365* STUDENT FOLLOWUP (RG IN 278):
 368* STUD JOB SITUATION (NAME X IN 365):
 371* STUD REASON NT WORKING SEEKING JOB (NAME X IN 365):
 374* STUD WAGES MONTH (NAME X IN 365):
 377* STUD WAGES WEEK (NAME X IN 365):
 380* STUD WAGES HOUR (NAME X IN 365):
 381* STUD EMP STREET (NON-KEY NAME X(16) IN 365):
 382* STUD EMP CITY (NON-KEY NAME X(16) IN 365):
 383* STUD JOB TAKEN (NAME X IN 365):
 384* STUD EMP STATE (NON-KEY NAME X(12) IN 365):
 385* STUD EMP ZIP (NON-KEY NAME X(5) IN 365):
 386* STUD PROGRAM RELATED (NAME X IN 365):
 389* STUD RECOMMENDATION (NAME X IN 365):
 392* STUD OCCUPATIONAL USE (NAME X IN 365):
 393* STUD EMP NAME (NON-KEY NAME X(28) IN 365):
 395* STUD REASON NT COMPLETE (NAME X IN 365):
 396* STUD JOB TITLE (NAME X(34) IN 365):

398* STUDENT INDIVIDUAL SPECIAL NEEDS (RG IN 278):
 401* STUD BASIC EDUCATION (NAME X IN 398):
 404* STUD READER INTERPRETER (NAME X IN 398):
 407* STUD PSYCHOLOGICAL SOCIAL WORK (NAME X IN 398):
 410* STUD SPECIAL JOB DEVELOPMENT (NAME X IN 398):
 413* STUD MORIL UNIT SERVICES (NAME X IN 398):
 416* STUD SPECIAL TRANSPORTATION (NAME X IN 398):
 419* STUD SERVED BY BUREAU VOC REHAB (NAME X IN 398):
 422* STUD INSTRUCTION FOR ENGLISH PROF (NAME X IN 398):
 425* STUD OTHER (NAME X IN 398):
 428* STUD SPECIAL NEEDS DISA (NAME X IN 398):
 429* STUD SPECIAL NEEDS HANDI (NAME X IN 398):
 431* ENROLLMENT BEGINNING OF TERM (RG IN 239):
 434* BOT STUD GRADE PURPOSE (NAME X IN 431):
 437* BOT STUD MALE (NON-KEY INTEGER NUMBER 999 IN 431):
 440* BOT STUD FEMALE (NON-KEY INTEGER NUMBER 999 IN 431):
 443* BOT STUD DISADVANTAGED (NON-KEY INTEGER NUMBER 999 IN
 431):
 446* BOT STUD HANDICAPPED (NON-KEY INTEGER NUMBER 999 IN 4
 31):
 449* BOT STUD SPNISH (NON-KEY INTEGER NUMBER 999 IN 431):
 452* BOT STUD BLACK (NON-KEY INTEGER NUMBER 999 IN 431):
 455* BOT STUD ORIENTAL AM (NON-KEY INTEGER NUMBER 999 IN 4
 31):
 458* BOT STUD AM INDIAN (NON-KEY INTEGER NUMBER 999 IN 431
):
 461* ENROLLMENT END OF TERM (RG IN 239):
 464* BOT STUD GRADE PURPOSE (NAME X IN 461):
 467* BOT STUD COMPLETED MALE (NON-KEY INTEGER NUMBER 999 I
 N 461):
 470* BOT STUD COMPLETED FEMALE (NON-KEY INTEGER NUMBER 999
 IN 461):
 473* BOT STUD DO WITH SKILLS MALE (NON-KEY INTEGER NUMBER
 999 IN 461):
 476* BOT STUD DO WITH SKILLS FEMALE (NON-KEY INTEGER NUMBE
 R 999 IN 461):
 479* BOT STUD WITHOUT SKILLS - STAT UNK MALE (NON-KEY INTE
 GER NUMBER 999 IN 461):
 482* BOT STUD WITHOUT SKILLS - STAT UNK FEMALE (NON-KEY IN
 TEGER NUMBER 999 IN 461):
 485* BOT STUD COMPLETED DISADVANTAGED (NON-KEY INTEGER NUM
 BER 999 IN 461):
 488* BOT STUD COMPLETED HANDICAPPED (NON-KEY INTEGER NUMBE
 R 999 IN 461):
 491* BOT STUD DO WITH SKILLS DISADVANTAGED (NON-KEY INTEGE
 R NUMBER 999 IN 461):
 494* BOT STUD DO WITH SKILLS HANDICAPPED (NON-KEY INTEGER
 NUMBER 999 IN 461):
 497* BOT STUD DO WITHOUT SKILLS DISADVANTAGED - STAT UNK I
 NON-KEY INTEGER NUMBER 999 IN 461):
 500* BOT STUD DO WITHOUT SKILLS HANDICAPPED - STAT UNK (NO
 N-KEY INTEGER NUMBER 999 IN 461):
 503* BOT STUD COMPLETED SPNISH (NON-KEY INTEGER NUMBER 999
 IN 461):
 506* BOT STUD COMPLETED BLACK (NON-KEY INTEGER NUMBER 999
 IN 461):
 509* BOT STUD COMPLETED ORIENTAL AM (NON-KEY INTEGER NUMBE
 R 999 IN 461):

512* EOT STUD COMPLETED AM INDIAN (NON-KEY INTEGER NUMBER
 999 IN 461):
 515* EOT STUD DO WITH SKILLS SPNISH (NON-KEY INTEGER NUMBE
 R 999 IN 461):
 518* EOT STUD DO WITH SKILLS BLACK (NON-KEY INTEGER NUMBER
 999 IN 461):
 521* EOT STUD DO WITH SKILLS ORIENTAL AM (NON-KEY INTEGER
 NUMBER 999 IN 461):
 524* EOT STUD DO WITH SKILLS AM INDIAN (NON-KEY INTEGER NU
 MBER 999 IN 461):
 527* EOT STUD DO WITHOUT SKILLS SPNISH - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):
 530* EOT STUD DO WITHOUT SKILLS BLACK - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):
 533* EOT STUD DO WITHOUT SKILLS ORI AM - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):
 536* EOT STUD DO WITHOUT SKILLS AM IND - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):
 539* ENROLLMENT CHARACTERISTICS SPECIAL NEEDS (RG IN 239):
 542* CPN STUD GRADE PURPOSE (NAME X IN 539):
 545* CPN STUD ILLITERATE ANY LANGUAGE (NON-KEY INTEGER NUM
 BER 999 IN 539):
 548* CPN STUD LANGUAGE BARRIER (NON-KEY INTEGER NUMBER 999
 IN 539):
 551* CPN STUD LACK ED SKILLS (NON-KEY INTEGER NUMBER 999 I
 N 539):
 554* CPN STUD POOR ATTENDANCE (NON-KEY INTEGER NUMBER 999
 IN 539):
 557* CPN STUD NEED FINANCIAL ASSISTANCE (NON-KEY INTEGER N
 UMBER 999 IN 539):
 560* CPN STUD MENTAL RETARD (NON-KEY INTEGER NUMBER 999 IN
 539):
 563* CPN STUD EMOTIONAL PROBLEMS (NON-KEY INTEGER NUMBER 9
 99 IN 539):
 566* CPN STUD VISION (NON-KEY INTEGER NUMBER 999 IN 539):
 569* CPN STUD HEARING (NON-KEY INTEGER NUMBER 999 IN 539):
 572* CPN STUD ORTHOPEDIC (NON-KEY INTEGER NUMBRER 999 IN 53
 9):
 575* CPN STUD DRUGS (NON-KEY INTEGER NUMBER 999 IN 539):
 578* CPN STUD OTHER PHYSICAL (NON-KEY INTEGER NUMBER 999 I
 N 539):
 581* CPN STUD MULTI HANDICAPPED (NON-KEY INTEGER NUMBER 99
 9 IN 539):
 584* PROGRAM COMPLETIONS (RG IN 239):
 587* PC GROUP (NAME X IN 584):
 590* PC COMPLETING MALE (NON-KEY INTEGER NUMBER 999 IN 584
):
 593* PC COMPLETING FEMALE (NON-KEY INTEGER NUMBER 999 IN 5
 84):
 596* PC COMPLETING STATUS UNKNOWN MALE (NON-KEY INTEGER NU
 MBER 999 IN 584):
 599* PC COMPLETING STATUS UNKNOWN FEMALE (NON-KEY INTEGER
 NUMBER 999 IN 584):
 602* PC COMPLETING CONTINUING ED MALE (NON-KEY INTEGER NUM
 BER 999 IN 584):
 605* PC COMPLETING CONTINUING ED FEMALE (NON-KEY INTEGER N
 UMBER 999 IN 584):
 608* PC COMPLETING OTHER REASONS MALE (NON-KEY INTEGER NUM

RER 999 IN 584):
 611* PC COMPLETING OTHER REASONS FEMALE (NON-KEY INTEGER N
 UMBER 999 IN 584):
 614* PC COMPLETING EMPLOYED FULL TIME MALE (NON-KEY INTEGE
 R NUMBER 999 IN 584):
 617* PC COMPLETING EMPLOYED FULL TIME FEMALE (NON-KEY INTE
 GER NUMBER 999 IN 584):
 620* PC COMPLETING UNEMPLOYED SEEKING MALE (NON-KEY INTEGE
 R NUMBER 999 IN 584):
 623* PC COMPLETING UNEMPLOYED SEEKING FEMALE (NON-KEY INTE
 GER NUMBER 999 IN 584):
 626* PC COMPLETING OTHER EMPLOYMENT MALE (NON-KEY INTEGER
 NUMBER 999 IN 584):
 629* PC COMPLETING OTHER EMPLOYMENT FEMALE (NON-KEY INTEGE
 R NUMBER 999 IN 584):
 632* PC COMPLETING PLACED BY SCHOOL TEACHER MALE (NON-KEY
 INTEGER NUMBER 999 IN 584):
 635* PC COMPLETING PLACED BY SCHOOL TEACHER FEMALE (NON-KE
 Y INTEGER NUMBER 999 IN 584):
 638* EQUIPMENT SPECIAL NEEDS - SERVICES (RG IN 239):
 644* ESMS DESCRIPTION (NON-KEY NAME X(25) IN 638):
 647* ESMS CODE (NAME X(7) IN 638):
 650* ESMS NO UNITS NEEDED REQUESTED (NON-KEY INTEGER NUMBE
 R 99 IN 638):
 653* ESMS COST PER UNIT PURCHASED (NON-KEY INTEGER NUMBER
 9(5) IN 638):
 656* ESMS COST PER UNIT LEASE RENTAL (NON-KEY INTEGER NUMB
 ER 9(5) IN 638):
 662* ESMS EST COST ALL UNITS (NON-KEY INTEGER NUMBER 9(5)
 IN 638):
 665* ESMS PURPOSE (NAME X IN 638):
 668* ESMS NO UNITS APPROVED (NON-KEY INTEGER NUMBER 99 IN
 638):
 671* ESMS APPROVAL DEFERRED (NAME X IN 638):
 674* ESMS APPROVAL DEFERRED INITIALS (NAME XXX IN 638):
 698* ENROLLMENT - RESOURCE REQUIREMENTS (RG IN 239):
 701* ADMIN LEVEL (NAME X IN 698):
 703* NT YET APPROVED (NAME X IN 698):
 704* ADMIN CYCLE (INTEGER NUMBER 9 IN 698):
 707* ADMIN ACTUAL ESTIMATED YEAR (INTEGER NUMBER 99 IN 698
):
 710* ADMIN NUMBER OF LOCATIONS (NON-KEY INTEGER NUMBER 99
 IN 698):
 713* ADMIN ENROLLMENT PUBLIC MALE (NON-KEY INTEGER NUMBER
 9(5) IN 698):
 716* ADMIN ENROLLMENT PUBLIC FEMALE (NON-KEY INTEGER NUMBE
 R 9(5) IN 698):
 725* ADMIN FTE ENROLLMENT (NON-KEY DECIMAL NUMBER 999.9 1
 N 698):
 728* ADMIN INSTRUCTIONAL COSTS (NON-KEY INTEGER NUMBER 9(6
) IN 698):
 731* ADMIN COST OF EQUIPMENT (NON-KEY INTEGER NUMBER 9(6)
 IN 698):
 734* ADMIN BOOKS - SUPPLIES (NON-KEY INTEGER NUMBER 9(5) 1
 N 698):
 737* ADMIN STUDENT TRANSPORTATION (NON-KEY INTEGER NUMBER
 9(5) IN 698):
 740* ADMIN CONTRACT COSTS (NON-KEY INTEGER NUMBER 9(5) IN

698):
 IN 698):
 R 999.9 IN 698):
 N 698):
 9(6) IN 698):
 743* ADMIN TOTAL DIRECT COSTS (NON-KEY INTEGER NUMBER 9(6)
 746* ADMIN PERCENT OF STATE SUPPORT (NON-KEY DECIMAL NUMBE
 749* ADMIN SOURCES OF FUNDING (NON-KEY INTEGER NUMBER 99 I
 758* ADMIN AMOUNT OF STATE SUPPORT (NON-KEY INTEGER NUMBER
 761* APPLICATION FOR NEW - CONTINUING PROGRAMS (RG IN 239):
 764* APP CODE NEW CONTINUING (NAME X IN 761):
 765* APP LEVEL (NAME X IN 761):
 767* APP GRADE NINE (NON-KEY NAME X IN 761):
 770* APP GRADE TEN (NON-KEY NAME X IN 761):
 773* APP GRADE ELEVEN (NON-KEY NAME X IN 761):
 776* APP GRADE TWELVE (NON-KEY NAME X IN 761):
 779* APP ANTIC START DATE (NON-KEY INTEGER NUMBER 9999 IN
 761):
 782* APP ANTIC END DATE (NON-KEY INTEGER NUMBER 9999 IN 76
 785* APP PREREQUISITES AGE (NAME X IN 761):
 788* APP PREREQUISITES ACHIEVEMENT (NAME X IN 761):
 791* APP OTHER (NAME X IN 761):
 794* APP ENTRY EXIT CONCEPT (NAME X IN 761):
 797* APP STUDENT ENROLLED THIS PROGRAM WHEN (NAME X IN 761
 800* APP EXTENDED FLEXIBLE SCHEDULING (NAME X IN 761):
 803* APP PSYCHOLOGICAL SOCIAL WORK SERVICES (NAME X IN 761
 806* APP EMPLOYERS PROVIDING WORK (INTEGER NUMBER 9(4) IN
 761):
 809* APP TRAINING STATIONS (INTEGER NUMBER 999 IN 761):
 812* APP NO GROUPS DETERMINING NEED BUSINESS (INTEGER NUMB
 ER 99 IN 761):
 815* APP NO GROUPS DETERMINING NEED LABOR UNION (INTEGER N
 UMBER 99 IN 761):
 818* APP NO GROUPS DETERMINING NEED MANPOWER PLANNING (INT
 EGGER NUMBER 99 IN 761):
 821* APP NO GROUPS DETERMINING NEED STATE EMPL OFFICE (INT
 EGGER NUMBER 99 IN 761):
 824* APP MANPOWER SURVEY CONDUCTED (NAME X IN 761):
 827* APP CONDUCTED BY (NAME X(10) IN 761):
 830* APP CONDUCTED YEAR (INTEGER NUMBER 99 IN 761):
 833* APP MANPOWER DATA OTHER SOURCES (NAME X IN 761):
 836* APP MANPOWER DATA SOURCE ONE (NAME X(20) IN 761):
 839* APP MANPOWER DATA SOURCE YEAR ONE (INTEGER NUMBER 99
 IN 761):
 842* APP MANPOWER DATA SOURCE TWO (NAME X(20) IN 761):
 845* APP MANPOWER DATA SOURCE YEAR TWO (INTEGER NUMBER 99
 IN 761):
 848* APP SUPPORT NEED 1 (NAME X IN 761):
 851* APP DEMAND SOURCE ONE (NAME X(20) IN 761):
 854* APP DEMAND YEAR ONE (INTEGER NUMBER 99 IN 761):
 857* APP SUPPORT NEED 2 (NAME X IN 761):
 860* APP DEMAND SOURCE TWO (NAME X(20) IN 761):
 863* APP DEMAND YEAR TWO (INTEGER NUMBER 99 IN 761):
 866* PRI SECTOR CONTRIBUTIONS (NON-KEY INTEGER NUMBER 9(5)
 IN 761):

9 IN 761): 867* PRI SECTOR SQ FT (NON-KEY INTEGER NUMBER 999
 869* PRI GROUPA THIS YEAR (NON-KEY NAME X(20) IN 761):
 872* PRI GROUPB THIS YEAR (NON-KEY NAME X(20) IN 761):
 875* PRI GROUPC THIS YEAR (NON-KEY NAME X(20) IN 761):
 878* PRI GROUPD THIS YEAR (NON-KEY NAME X(20) IN 761):
 881* GOV AGENCY CONTRIBUTIONS (NON-KEY INTEGE
 R NUMBER 9(5) IN 761): 884* GOV AGENCY SQ FT (NON-KEY INTEGER
 NUMBER 9(4) IN 761):
 887* GOV GROUPA THIS YEAR (NON-KEY NAME X(20) IN 761):
 890* GOV GROUPB THIS YEAR (NON-KEY NAME X(20) IN 761):
 893* GOV GROUPC THIS YEAR (NON-KEY NAME X(20) IN 761):
 896* GOV GROUPD THIS YEAR (NON-KEY NAME X(20) IN 761):
 897* PROGRAM ACCESS (NON-KEY NAME X IN 761):
 899* GOV WAGE EARNED BY STUDENTS THIS YEAR (INTEGER NUMBER
 9(5) IN 761): 902* GOV NO STUDENTS PARTICIPATED (NON-KEY INTEGER NUMBER 9
 999 IN 761): 905* GOV SPECIAL - MODIFIED EQUIP AVAILABILITY (NAME X IN
 761): 908* APP VOC COURSES INSTRUCTIONAL PROG NEXT YEAR (RG IN 7
 61): 911* VOC COURSE NAME (NAME X(30) IN 908):
 914* VOC AVG HRS INST PER WEEK (NON-KEY INTEGER NUMBER 9
 9 IN 908): 917* VOC NO WEEKS TO COMPLETE (NON-KEY INTEGER NUMBER 99
 9 IN 908): 920* VOC TOTAL CONTACT HRS (NON-KEY INTEGER NUMBER 999 I
 N 908): 923* VOC COURSE CODE (NAME X(5) IN 908):
 926* APP SCHOOL COMMUNITY FACILITIES TO HOUSE PROG (RG IN
 761): 929* FAC NAME OF SCHOOL - FACILITY (NAME X(20) I
 N 926): 932* FAC SQ FEET ALLOCATED (NON-KEY INTEGER NUMBER 9999
 IN 926): 935* FAC NO HRS PER WEEK SPACE USED (NON-KEY INTEGER NUM
 BER 99 IN 926): 938* FAC SQ FEET TO BE USED FOR RELATED INST (NON-KEY IN
 TEGER NUMBER 9999 IN 926): 941* FAC HRS PER WEEK SPACE USED RELATED INST (NON-KEY I
 NTEGER NUMBER 99 IN 926): 944* FAC BUILDING NO (INTEGER NUMBER 999 IN 926):
 947* APP JOB PROG COMPLETORS FIND EMPLOYMENT (RG IN 761):
 950* FE JOB TITLE (NAME X(20) IN 947):
 953* FE DOT CODE (NAME X(11) IN 947):
 956* FE ENTRY LEVEL WAGE PER HOUR (DECIMAL NUMBE
 R 99.99 IN 947): 959* APP TERMINAL STUDENT PERFORMANCES (RG IN 761):
 962* TERM PERFORMANCES (NON-KEY NAME X(25) IN 959):
 965* TERM PERFORMANCES CODES (NAME XXXX IN 959):
 968* APP ADVISOR COMMITTEE NO PERSONS (RG IN 761):
 971* ADV NUMBER SEP ADVISORY COMMITTEES (NON-KEY INTEGER
 NUMBER 99 IN 968): 975* ADV IND EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968
): 976* ADV IND EMPLOYEES (INTEGER NUMBER 99 IN 968):

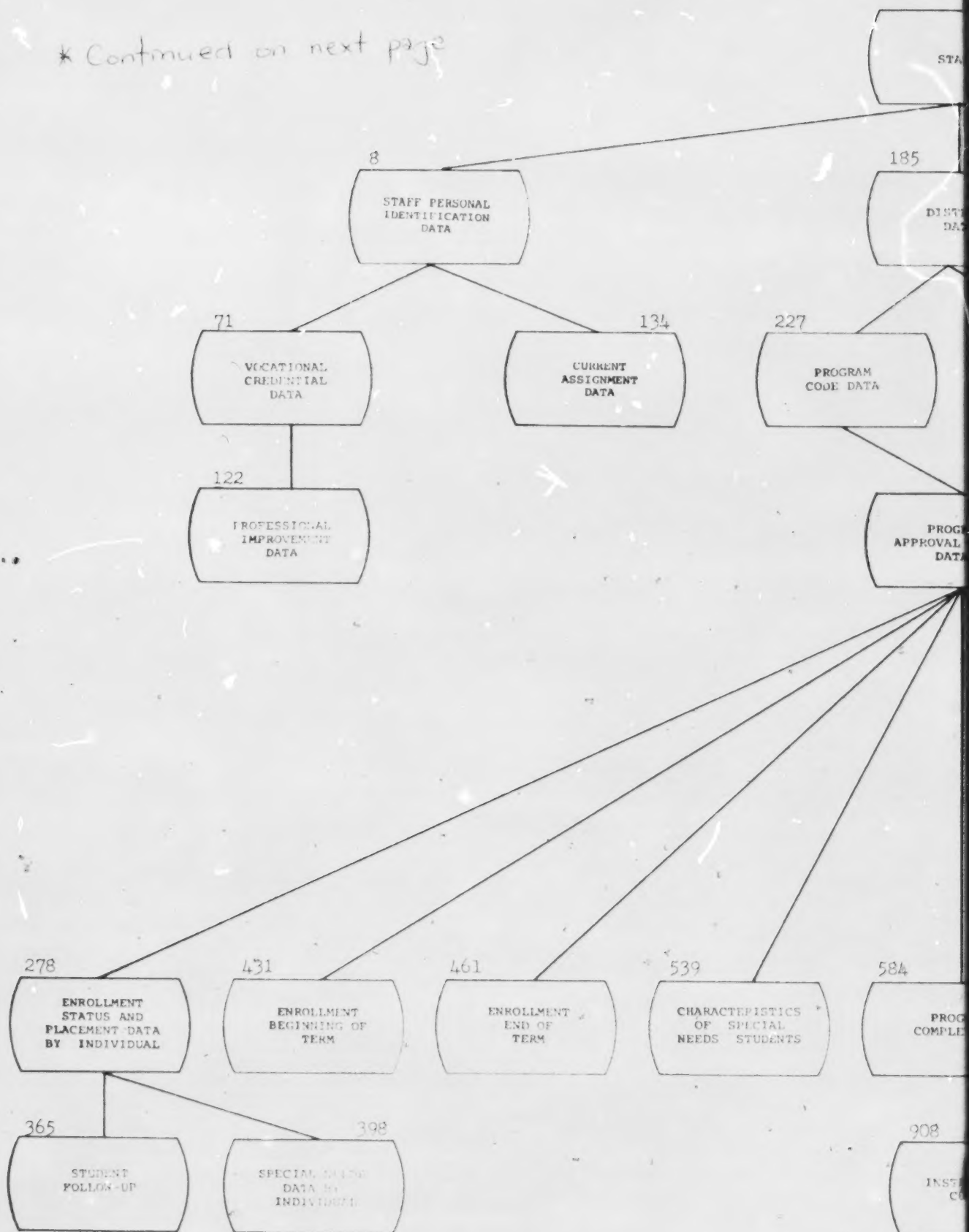
977* ADV BUS EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968
):
978* ADV PS EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968):
979* ADV PS EMPLOYEES (INTEGER NUMBER 99 IN 968):
980* ADV BUS EMPLOYEES (INTEGER NUMBER 99 IN 968):
981* ADV GOV EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968
):
982* ADV GOV EMPLOYEES (INTEGER NUMBER 99 IN 968):
983* ADV PARENTS (NON-KEY INTEGER NUMBER 99 IN 968):
986* ADV STUDENTS (NON-KEY INTEGER NUMBER 99 IN 968):
989* ADV EDUCATORS (NON-KEY INTEGER NUMBER 99 IN 968):
992* ADV OTHERS (NON-KEY INTEGER NUMBER 99 IN 968):

MAP:
DESCRIBE:
CONTROL:
PRINT DATA BASE SIZE:
EXIT:

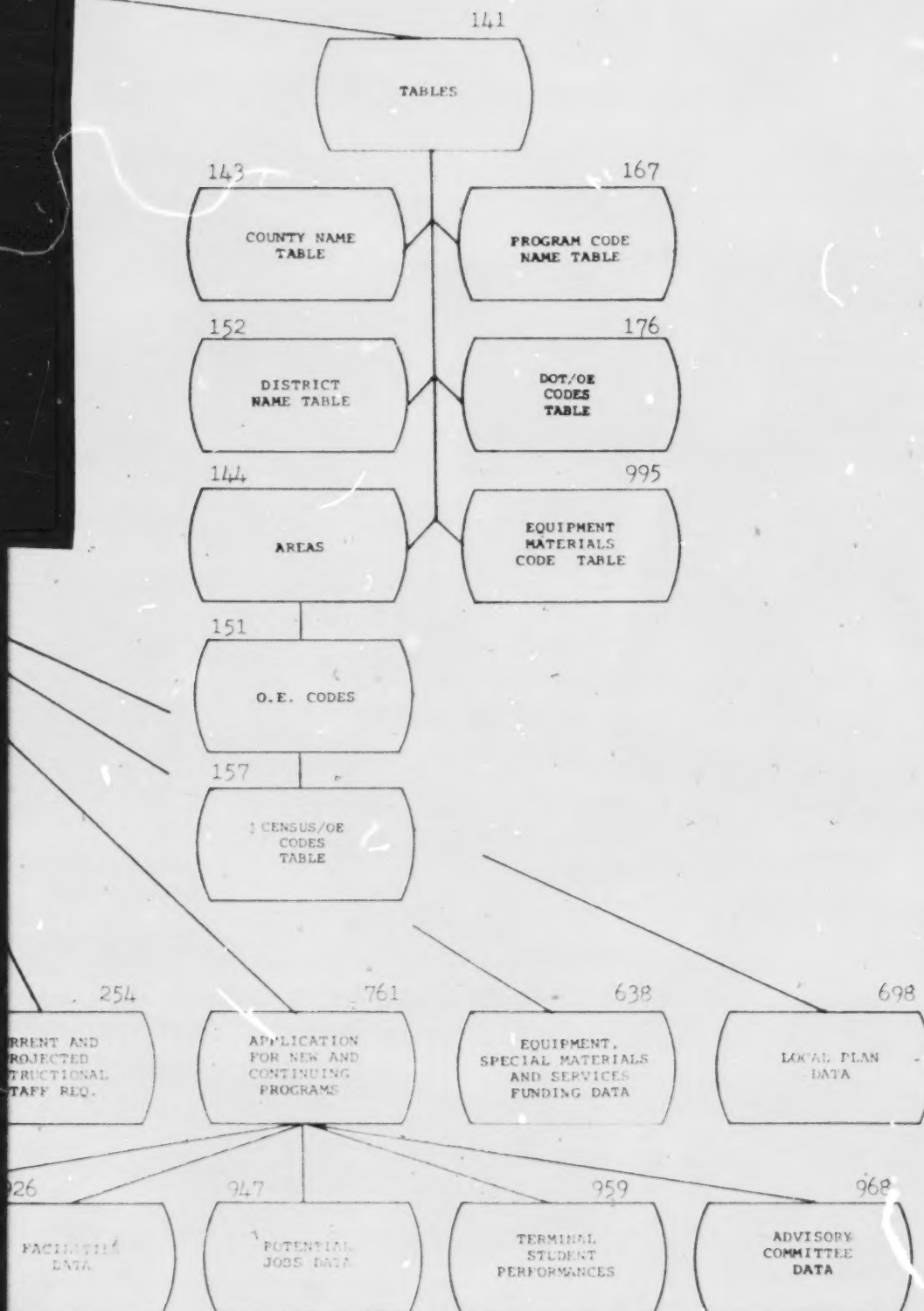
APPENDIX E

BREAKDOWN OF MISVE DATA BASE

* Continued on next page



MISVE DATA BASE TREE STRUCTURE



UNIT A

Entry (Level 0) information

Entry Date is the date the logical entry was loaded into the data base. State Identification contains the two character state abbreviation.

- 5* STATE IDENTIFICATION (NAME XX)
- 6* ENTRY-DATE (DATE)

UNIT B

The following four RGs comprise the Staff Demographic Information tree.

Vocational Staff Data (RG 8)

This repeating group holds personal identification information for each staff member.

Administrative Assignment (RG 134)

This repeating group contains data concerning each instructor's administrative responsibilities.

Vocational Credential Data (RG 71)

RG 71 given information on the instructor's teaching experience and professional credentials.

Professional Improvement Data (RG 122)

This repeating group holds data about a staff member's professional training and education.

8* STAFF INFORMATION (RG):
 11* STAFF LAST NAME (NAME X(11) IN 8):
 14* STAFF FIRST NAME (NAME X(10) IN 8):
 17* STAFF MIDDLE INITIAL (NAME X IN 8):
 20* STAFF SOCIAL SECURITY (NAME X(11) IN 8):
 23* STAFF LEVEL CODE (INTEGER NUMBER 9 IN 8):
 26* STAFF DISTRICT (INTEGER NUMBER 9(8) IN 8):
 65* STAFF SEX (NAME X IN 8):
 68* STAFF AGE (NON-KEY INTEGER NUMBER 99 IN 8):
 71* STAFF VOC CREDENTIAL INFO (RG IN 8):
 74* STAFF VOC CREDENTIAL HELD (NAME X IN 71):
 77* STAFF TYPE TEACHING CERTIFICATE (NAME X IN 71):
 80* STAFF GOV JOB CERTIFICATE (NAME X IN 71):
 83* STAFF INSTITUTION (NAME X(10) IN 71):
 86* STAFF EXPIRATION YEAR (INTEGER NUMBER 99 IN 71):
 89* STAFF RENEWAL CONDITIONS (NAME X IN 71):
 92* STAFF OCCUPATIONAL EXPERIENCE (INTEGER NUMBER 999 IN 71):
 95* STAFF TEACHING EXPERIENCE (INTEGER NUMBER 999 IN 71):
 98* STAFF TOTAL YRS OF EDUCATION (NON-KEY INTEGER NUMBER 99 IN 71):
 99* STAFF SEMINAR HOURS (NON-KEY INTEGER NUMBER 999 IN 71):
 100* STAFF WORK EXPERIENCE (NON-KEY INTEGER NUMBER 999 IN 71):
 101* STAFF HIGHEST DEGREE EARNED (NAME X IN 71):
 104* STAFF COURSE WORK FOR RENEWAL (NON-KEY INTEGER NUMBER 99 IN 71):
 107* STAFF APPLICATION DATE (NON-KEY DATE IN 71):
 109* STAFF ADDRESS (NON-KEY NAME X(20) IN 71):
 110* STAFF CITY (NON-KEY NAME X(15) IN 71):
 113* STAFF STATE (NON-KEY NAME XX IN 71):
 116* STAFF ZIP CODE (NON-KEY INTEGER NUMBER 9(5) IN 71):
 119* STAFF TELEPHONE NO (NON-KEY NAME X(12) IN 71):
 122* STAFF VCI PROGRAMS (RG IN 71):
 125* STAFF PROGRAM AREA (NAME XX IN 122):
 128* STAFF PROGRAM LEVEL (INTEGER NUMBER 9 IN 122):
 131* STAFF TIME IN PROGRAM (INTEGER NUMBER 9 IN 122):
 134* STAFF PROGRAMS (RG IN 8):
 29* STAFF COURSE WORK HOURS COMPLETED (INTEGER NUMBER 99 IN 134):
 32* STAFF SEMINAR WORK SHOPS ATTENDED (INTEGER NUMBER 99 IN 134):
 35* STAFF SEMINAR HOURS PARTICIPATED (INTEGER NUMBER 999 IN 134):
 38* STAFF SEMINAR WORK EXPERIENCE (INTEGER NUMBER 999 IN 134):
 39* STAFF POSITION CODE (NAME X IN 134):
 41* STAFF SEMINAR ADVISOR VOC STUD URG CHK (NON-KEY NAME X IN 134):
 137* STAFF PROGRAM NO 1 (INTEGER NUMBER 9(6) IN 134):
 138* STAFF PROGRAM NO 2 (INTEGER NUMBER 9(6) IN 134):
 139* STAFF PROGRAM NO 3 (INTEGER NUMBER 9(6) IN 134):

UNIT C

These eight repeating groups contain various tables of codes and their translations. The tables are for user reference and for possible use by future PLI programs.

- . County Name Table - C143
- . DOT/OE Code Table - C176
- . District Name Table - C152
- . Program Name Table - C167
- . Equipment/Materials Table - C995
- . Census/OE Code Table - C144, C151, C157

141* TABLES (RG):

142* TABLE ID (NAME X(10) IN 141):
 143* COUNTY NAMES (RG IN 141):
 146* COUNTY (NON-KEY NAME X(15) IN 143):
 149* COUNTY NUMBER (NON-KEY INTEGER NUMBER 999 IN 143):
 144* AREAS (RG IN 141):
 147* REG CODE (NAME XX IN 144):
 151* OE CODEX (RG IN 144):
 153* OE NUMBER (NAME X(6) IN 151):
 156* OE TITLE (NAME X(71) IN 151):
 157* CENSUS (RG IN 151):
 163* CEN CODE (NAME XXX IN 157):
 166* CEN TITLE (NAME X(65) IN 157):
 168* CEN CUR DEMAND (INTEGER NUMBER 9(6) IN 157):
 171* CEN PROJ DEMAND (INTEGER NUMBER 9(6) IN 157):
 152* DISTRICTS (RG IN 141):
 155* DISTRICT (NAME X(20) IN 152):
 158* DISTRICT NO (INTEGER NUMBER 999 IN 152):
 161* COUNTY CODE (INTEGER NUMBER 999 IN 152):
 164* REGION (INTEGER NUMBER 99 IN 152):
 165* DISTRICT CODE (INTEGER NUMBER 9(8) IN 152):
 167* OE PROGRAMS (RG IN 141):
 170* OE PROGRAM (NAME X(20) IN 167):
 173* OE PROGRAM NUMBER (INTEGER NUMBER 9(6) IN 167):
 176* DOT CODES (RG IN 141):
 179* DOT (NAME X(50) IN 176):
 182* DOT CODE (INTEGER NUMBER 9(9) IN 176):
 1820* OE CODE (NAME X(9) IN 176):
 1821* OE PROGRAM FIELD (NAME XX IN 176):
 1822* OE PROGRAM SUBFIELD (NAME X(6) IN 176):
 1823* OE CURRENT DEMAND (INTEGER NUMBER 9(6) IN 176):
 1824* OE PROJECTED DEMAND (INTEGER NUMBER 9(6) IN 176):
 995* EQUIPMENT MATERIALS (RG IN 141):
 997* EQUIPMENT CODE (NAME X(12) IN 995):
 999* EQUIPMENT DESCRIPTION (NON-KEY NAME X(40) IN 995):

UNIT D

This part of the data base structure holds District Information (RG 185), District Staff Requirements (RG 200), Program Information (RG 227), and Program Approval Information (RG 239).

The District Information holds identifying data for those districts which have vocational training.

District Staff Requirements Information is administrative data for an entire district.

Program Information identifies instructional programs within each district by OE code.

Program Approval Information holds program approval numbers for educational programs that have been approved or are pending approval.

185* DISTRICT INFORMATION (RG):
 188* DIST CODE (INTEGER NUMBER 9(8) IN 185):
 191* DIST EDUCATIONAL PLANNING REGION (INTEGER NUMBER 99 IN 185):
 194* DIST COUNTY NUMBER (INTEGER NUMBER 999 IN 185):
 197* DIST DISTRICT NUMBER (INTEGER NUMBER 999 IN 185):
 200* DIST STAFF REQ (RG IN 185):
 202* DIST POSITION CODE (NAME X IN 200):
 206* DIST CYCLE CODE (NAME X IN 200):
 209* DIST CYCLE YEAR (INTEGER NUMBER 99 IN 200):
 212* DIST FULL TIME (NON-KEY INTEGER NUMBER 99 IN 200):
 215* DIST PART TIME (NON-KEY INTEGER NUMBER 99 IN 200):
 218* DIST FTE PERSONS (NON-KEY DECIMAL NUMBER 999.9 IN 200):
 221* DIST POSITION COSTS (NON-KEY INTEGER NUMBER 9(6) IN 200):
 224* DIST POSITION NAME (NAME X(25) IN 200):
 227* PROGRAM INFORMATION (RG IN 185):
 230* PROGRAM CODE (INTEGER NUMBER 9(6) IN 227):
 233* PROGRAM FIELD (INTEGER NUMBER 99 IN 227):
 236* INDIVIDUAL PROGRAMS (INTEGER NUMBER 9999 IN 227):
 237* DE PROGRAM NAME (NAME X(20) IN 227):
 239* PROGRAM APPROVAL NO INFORMATION (RG IN 227):
 242* PROGRAM APPROVAL NO (INTEGER NUMBER 9(6) IN 239):
 245* PROGRAM LEVEL (INTEGER NUMBER 9 IN 239):
 248* PROGRAM TYPE (INTEGER NUMBER 9 IN 239):
 251* PROG APP NO (INTEGER NUMBER 9999 IN 239):

UNIT E

This Repeating Group of information carries all the Student Demographic data. Student follow-up and Student Individual Special Needs are presented in the two descendent data structures (C365 and C398).

278* STUDENT INFORMATION (RG IN 239):
 281* STUD LAST (NON-KEY NAME X(15) IN 278):
 284* STUD FIRST NAME (NON-KEY NAME X(10) IN 278):
 287* STUD MIDDLE INITIAL (NON-KEY NAME X IN 278):
 288* STUD GRADE (NAME X IN 278):
 289* STUD DISTRICT DIFF (INTEGER NUMBER 9(8) IN 278):
 290* STUD SOCIAL SECURITY NUMBER (NON-KEY NAME X(11) IN 27

P):

293* STUD SEX (NAME X IN 278):
 296* STUD ETHNIC GROUP (NAME X IN 278):
 299* STUD AGE (NON-KEY INTEGER NUMBER 99 IN 278):
 302* STUD WAGE (DECIMAL NUMBER 99.99 IN 278):
 305* STUD OBJECTIVE (NAME X IN 278):
 308* STUD ED PLAN (NAME X IN 278):
 311* STUD EMPLOYMENT (NAME X IN 278):
 314* STUD BIRTHDATE (DATE IN 278):
 317* STUD HANDICAPPED - DISADVANTAGED (NAME X IN 278):
 320* STUD PRIM HANDICAPPED (NAME X IN 278):
 323* STUD PRIM DISADVANTAGED (NAME X IN 278):
 326* STUD BLDG NO (INTEGER NUMBER 999 IN 278):
 329* STUD INST COMP FORM (NAME X(16) IN 278):
 332* STUD STATUS UNKNOWN (NAME X IN 278):
 335* STUD EMPLOYMENT AVAILABILITY (NAME X IN 278):
 338* STUD EMPLOYMENT STATUS (NAME X IN 278):
 341* STUD SCHOOL TEACHER TRYING TO PLACE (NAME X IN 278):
 344* STUD MAJOR REASON NT PLACED (NAME X IN 278):
 347* STUD COOP WORK EXPERIENCE (NAME X IN 278):
 350* STUD VOCATIONAL ORG (NAME X IN 278):
 353* STUD DROPPED PROGRAM (NAME X IN 278):
 359* STUD COMP PROGRAM CHECK (NAME X IN 278):
 362* STUD WITHDRAW CHECK (NAME X IN 278):
 363* STUD CURRENTLY ENROLLED (NAME X IN 278):
 365* STUDENT FOLLOWUP (RG IN 278):
 368* STUD JOB SITUATION (NAME X IN 365):
 371* STUD REASON NT WORKING SEEKING JOB (NAME X IN 365):
 374* STUD WAGES MONTH (NAME X IN 365):
 377* STUD WAGES WEEK (NAME X IN 365):
 380* STUD WAGES HOUR (NAME X IN 365):
 381* STUD EMP STREET (NON-KEY NAME X(16) IN 365):
 382* STUD EMP CITY (NON-KEY NAME X(16) IN 365):
 383* STUD JOB TAKEN (NAME X IN 365):
 384* STUD EMP STATE (NON-KEY NAME X(13) IN 365):
 385* STUD EMP ZIP (NON-KEY NAME X(5) IN 365):
 386* STUD PROGRAM RELATED (NAME X IN 365):
 389* STUD RECOMMENDATION (NAME X IN 365):
 392* STUD OCCUPATIONAL USE (NAME X IN 365):
 393* STUD EMP NAME (NON-KEY NAME X(28) IN 365):
 395* STUD REASON NT COMPLETE (NAME X IN 365):
 396* STUD JOB TITLE (NAME X(34) IN 365):
 398* STUDENT INDIVIDUAL SPECIAL NEEDS (RG IN 278):
 401* STUD BASIC EDUCATION (NAME X IN 398):
 404* STUD READER INTERPRETER (NAME X IN 398):
 407* STUD PSYCHOLOGICAL SOCIAL WORK (NAME X IN 398):
 410* STUD SPECIAL JOB DEVELOPMENT (NAME X IN 398):
 413* STUD MORIL UNIT SERVICES (NAME X IN 398):
 416* STUD SPECIAL TRANSPORTATION (NAME X IN 398):
 419* STUD SERVED BY BUREAU VOC REHAB (NAME X IN 398):
 422* STUD INSTRUCTION FOR ENGLISH PROF (NAME X IN 398):
 425* STUD OTHER (NAME X IN 398):
 428* STUD SPECIAL NEEDS DISA (NAME X IN 398):
 429* STUD SPECIAL NEEDS HANDI (NAME X IN 398):

UNIT F

Enrollment Beginning of Term (RG 431)

This structure contains summary enrollment information collected for each program at the beginning of a term.

431* ENROLLMENT BEGINNING OF TERM (RG IN 239):
 434* ROT STUD GRADE PURPOSE (NAME X IN 431):
 437* ROT STUD MALE (NON-KEY INTEGER NUMBER 999 IN 431):
 440* ROT STUD FEMALE (NON-KEY INTEGER NUMBER 999 IN 431):
 443* ROT STUD DISADVANTAGED (NON-KEY INTEGER NUMBER 999 IN
 431):
 446* ROT STUD HANDICAPPED (NON-KEY INTEGER NUMBER 999 IN 4
 31):
 449* ROT STUD SPANISH (NON-KEY INTEGER NUMBER 999 IN 431):
 452* ROT STUD BLACK (NON-KEY INTEGER NUMBER 999 IN 431):
 455* ROT STUD ORIENTAL AM (NON-KEY INTEGER NUMBER 999 IN 4
 31):
 458* ROT STUD AM INDIAN (NON-KEY INTEGER NUMBER 999 IN 431
):

UNIT G

Enrollment End of Term (RG 461)

This structure contains summary enrollment data collected for each program at the end of the term.

461* ENROLLMENT END OF TERM (RC IN 239):
 464* EOT STUD GRADE PURPOSE (NAME X IN 461):
 467* EOT STUD COMPLETED MALE (NON-KEY INTEGER NUMBER 999 I
 N 461):
 470* EOT STUD COMPLETED FEMALE (NON-KEY INTEGER NUMBER 999
 IN 461):
 473* EOT STUD DO WITH SKILLS MALE (NON-KEY INTEGER NUMBER
 999 IN 461):
 476* EOT STUD DO WITH SKILLS FEMALE (NON-KEY INTEGER NUMBE
 R 999 IN 461):
 479* EOT STUD WITHOUT SKILLS - STAT UNK MALE (NON-KEY INTE
 GER NUMBER 999 IN 461):
 482* EOT STUD WITHOUT SKILLS - STAT UNK FEMALE (NON-KEY IN
 TEGER NUMBER 999 IN 461):
 485* EOT STUD COMPLETED DISADVANTAGED (NON-KEY INTEGER NUM
 BER 999 IN 461):
 488* EOT STUD COMPLETED HANDICAPPED (NON-KEY INTEGER NUMBE
 R 999 IN 461):
 491* EOT STUD DO WITH SKILLS DISADVANTAGED (NON-KEY INTEGE
 R NUMBER 999 IN 461):
 494* EOT STUD DO WITH SKILLS HANDICAPPED (NON-KEY INTEGER
 NUMBER 999 IN 461):
 497* EOT STUD DO WITHOUT SKILLS DISADVANTAGED - STAT UNK (I
 NON-KEY INTEGER NUMBER 999 IN 461):
 500* EOT STUD DO WITHOUT SKILLS HANDICAPPED - STAT UNK (NO
 N-KEY INTEGER NUMBER 999 IN 461):
 503* EOT STUD COMPLETED SPNISH (NON-KEY INTEGER NUMBER 999
 IN 461):
 506* EOT STUD COMPLETED BLACK (NON-KEY INTEGER NUMBER 999
 IN 461):
 509* EOT STUD COMPLETED ORIENTAL AM (NON-KEY INTEGER NUMBE
 R 999 IN 461):
 512* EOT STUD COMPLETED AM INDIAN (NON-KEY INTEGER NUMBER
 999 IN 461):
 515* EOT STUD DO WITH SKILLS SPNISH (NON-KEY INTEGER NUMBE
 R 999 IN 461):
 518* EOT STUD DO WITH SKILLS BLACK (NON-KEY INTEGER NUMBER
 999 IN 461):
 521* EOT STUD DO WITH SKILLS ORIENTAL AM (NON-KEY INTEGER
 NUMBER 999 IN 461):
 524* EOT STUD DO WITH SKILLS AM INDIAN (NON-KEY INTEGER NU
 MBER 999 IN 461):
 527* EOT STUD DO WITHOUT SKILLS SPNISH - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):
 530* EOT STUD DO WITHOUT SKILLS BLACK - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):
 533* EOT STUD DO WITHOUT SKILLS ORI AM - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):
 536* EOT STUD DO WITHOUT SKILLS AM IND - STAT UNK (NON-KEY
 INTEGER NUMBER 999 IN 461):

UNIT H

Characteristics of Special Needs Students (RG 539)

Aggregate totals data concerning students with specific special needs are categorized by grade or purpose within RG 539.

539* ENROLLMENT CHARACTERISTICS SPECIAL NEEDS (RG IN 239):
 542* CPN STUD GRADE PURPOSE (NAME X IN 539):
 545* CPN STUD ILLITERATE ANY LANGUAGE (NON-KEY INTEGER NUM
 BER 999 IN 539):
 548* CPN STUD LANGUAGE BARRIER (NON-KEY INTEGER NUMBER 999
 IN 539):
 551* CPN STUD LACK ED SKILLS (NON-KEY INTEGER NUMBER 999 I
 N 539):
 554* CPN STUD POOR ATTENDANCE (NON-KEY INTEGER NUMBER 999
 IN 539):
 557* CPN STUD NEED FINANCIAL ASSISTANCE (NON-KEY INTEGER N
 UMBER 999 IN 539):
 560* CPN STUD MENTAL RETARD (NON-KEY INTEGER NUMBER 999 IN
 539):
 563* CPN STUD EMOTIONAL PROBLEMS (NON-KEY INTEGER NUMBER 9
 99 IN 539):
 566* CPN STUD VISION (NON-KEY INTEGER NUMBER 999 IN 539):
 569* CPN STUD HEARING (NON-KEY INTEGER NUMBER 999 IN 539):
 572* CPN STUD ORTHOPEDIC (NON-KEY INTEGER NUMBER 999 IN 53
 9):
 575* CPN STUD DRUGS (NON-KEY INTEGER NUMBER 999 IN 539):
 578* CPN STUD OTHER PHYSICAL (NON-KEY INTEGER NUMBER 999 I
 N 539):
 581* CPN STUD MULTI HANDICAPPED (NON-KEY INTEGER NUMBER 99
 9 IN 539):

UNIT I

Program Completions (RG 584)

This repeating group contains summary data for various categories of students completing any given program. The data is also classified by grade or group.

R

584* PROGRAM COMPLETIONS (RG IN 239):
 587* PC GROUP (NAME, X IN 584):
 590* PC COMPLETING MALE (NON-KEY INTEGER NUMBER 999 IN 584
):
 593* PC COMPLETING FEMALE (NON-KEY INTEGER NUMBER 999 IN 5
 84):
 596* PC COMPLETING STATUS UNKNOWN MALE (NON-KEY INTEGER NU
 MBER 999 IN 584):
 599* PC COMPLETING STATUS UNKNOWN FEMALE (NON-KEY INTEGER
 NUMBER 999 IN 584):
 602* PC COMPLETING CONTINUING ED MALE (NON-KEY INTEGER NUM
 BER 999 IN 584):
 605* PC COMPLETING CONTINUING ED FEMALE (NON-KEY INTEGER N
 UMBER 999 IN 584):
 608* PC COMPLETING OTHER REASONS MALE (NON-KEY INTEGER NUM
 BER 999 IN 584):
 611* PC COMPLETING OTHER REASONS FEMALE (NON-KEY INTEGER N
 UMBER 999 IN 584):
 614* PC COMPLETING EMPLOYED FULL TIME MALE (NON-KEY INTEGE
 R NUMBER 999 IN 584):
 617* PC COMPLETING EMPLOYED FULL TIME FEMALE (NON-KEY INTE
 GER NUMBER 999 IN 584):
 620* PC COMPLETING UNEMPLOYED SEEKING MALE (NON-KEY INTEGE
 R NUMBER 999 IN 584):
 623* PC COMPLETING UNEMPLOYED SEEKING FEMALE (NON-KEY INTE
 GER NUMBER 999 IN 584):
 626* PC COMPLETING OTHER EMPLOYMENT MALE (NON-KEY INTEGER
 NUMBER 999 IN 584):
 629* PC COMPLETING OTHER EMPLOYMENT FEMALE (NON-KEY INTEGE
 R NUMBER 999 IN 584):
 632* PC COMPLETING PLACED BY SCHOOL TEACHER MALE (NON-KEY
 INTEGER NUMBER 999 IN 584):
 635* PC COMPLETING PLACED BY SCHOOL TEACHER FEMALE (NON-KE
 Y INTEGER NUMBER 999 IN 584):

UNIT J

Staff Requirements Data (RG 254)

This repeating group contains data summarizing the staff requirements for any given instructional program within a district.

254* STAFF REQUIREMENTS (RG IN 239):
257* STAFF POS CODE (NAME X IN 254):
260* STAFF CYCLE CODE (NAME X IN 254):
263* STAFF YEAR (INTEGER NUMBER 99 IN 254):
266* STAFF FULL TIME (NON-KEY INTEGER NUMBER 99 IN 254):
269* STAFF PART TIME (NON-KEY INTEGER NUMBER 99 IN 254):
272* STAFF FTE PERSONS (NON-KEY DECIMAL NUMBER 99.99 IN 25
4):
275* STAFF POSITION NAME (NAME X(25) IN 254):

UNIT K

Application for New and Continuing Programs (RG 761)

The following repeating groups carry data collected from applications for new and continuing programs.

- . Instructional Courses (C908)
- . Facilities (C926)
- . Potential Jobs (C947)
- . Terminal Student Performances (C959)
- . Advisory Committee Data (C968)

761* APPLICATION FOR NEW - CONTINUING PROGRAMS (RG IN 239):

764* APP CODE NEW CONTINUING (NAME X IN 761):

765* APP LEVEL (NAME X IN 761):

767* APP GRADE NINE (NON-KEY NAME X IN 761):

770* APP GRADE TEN (NON-KEY NAME X IN 761):

773* APP GRADE ELEVEN (NON-KEY NAME X IN 761):

776* APP GRADE TWELVE (NON-KEY NAME Y IN 761):

779* APP ANTIC START DATE (NON-KEY INTEGER NUMBER 9999 IN

782* APP ANTIC END DATE (NON-KEY INTEGER NUMBER 9999 IN 76

785* APP PREREQUISITES AGE (NAME X IN 761):

788* APP PREREQUISITES ACHIEVEMENT (NAME X IN 761):

791* APP OTHER (NAME X IN 761):

794* APP ENTRY EXIT CONCEPT (NAME X IN 761):

797* APP STUDENT ENROLLED THIS PROGRAM WHEN (NAME X IN 761

800* APP EXTENDED FLEXIBLE SCHEDULING (NAME X IN 761):

803* APP PSYCHOLOGICAL SOCIAL WORK SERVICES (NAME X IN 761

806* APP EMPLOYERS PROVIDING WORK (INTEGER NUMBER 9(4) IN

761):

809* APP TRAINING STATIONS (INTEGER NUMBER 999 IN 761):

812* APP NO GROUPS DETERMINING NEED BUSINESS (INTEGER NUMB
ER 99 IN 761):

815* APP NO GROUPS DETERMINING NEED LABOR UNION (INTEGER N
UMBER 99 IN 761):

818* APP NO GROUPS DETERMINING NEED MANPOWER PLANNING (INT
EGER NUMBER 99 IN 761):

821* APP NO GROUPS DETERMINING NEED STATE EMPL OFFICE (INT
EGER NUMBER 99 IN 761):

824* APP MANPOWER SURVEY CONDUCTED (NAME X IN 761):
 827* APP CONDUCTED BY (NAME X(10) IN 761):
 830* APP CONDUCTED YEAR (INTEGER NUMBER 99 IN 761):
 833* APP MANPOWER DATA OTHER SOURCES (NAME X IN 761):
 836* APP MANPOWER DATA SOURCE ONE (NAME X(20) IN 761):
 839* APP MANPOWER DATA SOURCE YEAR ONE (INTEGER NUMBER 99
 IN 761):
 842* APP MANPOWER DATA SOURCE TWO (NAME X(20) IN 761):
 845* APP MANPOWER DATA SOURCE YEAR TWO (INTEGER NUMBER 99
 IN 761):
 848* APP SUPPORT NEED 1 (NAME X IN 761):
 851* APP DEMAND SOURCE ONE (NAME X(20) IN 761):
 854* APP DEMAND YEAR ONE (INTEGER NUMBER 99 IN 761):
 857* APP SUPPORT NEED 2 (NAME X IN 761):
 860* APP DEMAND SOURCE TWO (NAME X(20) IN 761):
 863* APP DEMAND YEAR TWO (INTEGER NUMBER 99 IN 761):
 866* PRI SECTOR CONTRIBUTIONS (NON-KEY INTEGER NUMBER 9(5)
 IN 761):
 867* PRI SECTOR SQ FT (NON-KEY INTEGER NUMBER 999
 9 IN 761):
 869* PRI GROUPA THIS YEAR (NON-KEY NAME X(20) IN 761):
 872* PRI GROUPB THIS YEAR (NON-KEY NAME X(20) IN 761):
 875* PRI GROUPC THIS YEAR (NON-KEY NAME X(20) IN 761):
 878* PRI GROUPD THIS YEAR (NON-KEY NAME X(20) IN 761):
 881* GOV AGENCY CONTRIBUTIONS (NON-KEY INTEGE
 R NUMBER 9(5) IN 761):
 884* GOV AGENCY SQ FT (NON-KEY INTEGER
 NUMBER 9(4) IN 761):
 887* GOV GROUPA THIS YEAR (NON-KEY NAME X(20) IN 761):
 890* GOV GROUPB THIS YEAR (NON-KEY NAME X(20) IN 761):
 893* GOV GROUPC THIS YEAR (NON-KEY NAME X(20) IN 761):
 896* GOV GROUPD THIS YEAR (NON-KEY NAME X(20) IN 761):
 897* PROGRAM ACCESS (NON-KEY NAME X IN 761):
 899* GOV WAGE EARNED BY STUDENTS THIS YEAR (INTEGER NUMBER
 9(5) IN 761):
 902* GOV NO STUDENTS PARTICIPATED (NON-KEY INTEGER NUMBER 9
 999 IN 761):
 905* GOV SPECIAL - MODIFIED EQUIP AVAILABILITY (NAME X IN
 761):

611): 908* APP VOC COURSES INSTRUCTIONAL PROG NEXT YEAR (RG IN 7
 911* VOC COURSE NAME (NAME X(30) IN 908):
 914* VOC AVG HRS INST PER WEEK (NON-KEY INTEGER NUMBER 9
 9 IN 908): 917* VOC NO WEEKS TO COMPLETE (NON-KEY INTEGER NUMBER 99
 9 IN 908): 920* VOC TOTAL CONTACT HRS (NON-KEY INTEGER NUMBER 999 I
 N 908): 923* VOC COURSE CODE (NAME X(5) IN 908):
 7611): 926* APP SCHOOL COMMUNITY FACILITIES TO HOUSE PROG (RG IN
 N 926): 929* FAC NAME OF SCHOOL - FACILITY (NAME X(20) I
 IN 926): 932* FAC SQ FEET ALLOCATED (NON-KEY INTEGER NUMBER 9999
 935* FAC NO HRS PER WEEK SPACE USED (NON-KEY INTEGER NUM
 PER 99 IN 926): 938* FAC SQ FEET TO BE USED FOR RELATED INST (NON-KEY IN
 TEGER NUMBER 9999 IN 926): 941* FAC HRS PER WEEK SPACE USED RELATED INST (NON-KEY I
 NTEGER NUMBER 99 IN 926): 944* FAC BUILDING NO (INTEGER NUMBER 999 IN 926):
 947* APP JOB PROG COMPLETORS FIND EMPLOYMENT (RG IN 761):
 950* FE JOB TITLE (NAME X(20) IN 947):
 953* FE DOT CODE (NAME X(11) IN 947):
 956* FE ENTRY LEVEL WAGE PER HOUR (DECIMAL NUMBE
 R 99.99 IN 947): 959* APP TERMINAL STUDENT PERFORMANCES (RG IN 761):
 962* TERM PERFORMANCES (NON-KEY NAME X(25) IN 959):
 965* TERM PERFORMANCES CODES (NAME XXXX IN 959):
 968* APP ADVISOR COMMITTEE NO PERSONS (RG IN 761):
 971* ADV NUMBER SEP ADVISORY COMMITTEES (NON-KEY INTEGER
 NUMBER 99 IN 968): 975* ADV IND EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968
): 976* ADV IND EMPLOYEES (INTEGER NUMBER 99 IN 968):
 977* ADV BUS EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968
): 978* ADV PS EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968):
 979* ADV PS EMPLOYEES (INTEGER NUMBER 99 IN 968):
 980* ADV BUS EMPLOYEES (INTEGER NUMBER 99 IN 968):
 981* ADV GOV EMPLOYERS (NON-KEY INTEGER NUMBER 99 IN 968
): 982* ADV GOV EMPLOYEES (INTEGER NUMBER 99 IN 968):
 983* ADV PARENTS (NON-KEY INTEGER NUMBER 99 IN 968):
 986* ADV STUDENTS (NON-KEY INTEGER NUMBER 99 IN 968):
 989* ADV EDUCATORS (NON-KEY INTEGER NUMBER 99 IN 968):
 992* ADV OTHERS (NON-KEY INTEGER NUMBER 99 IN 968):

UNIT L

Equipment Special Materials and Service Funding Data (RG 638)

This repeating group contains cost, purpose, and approval data concerning the funding of equipment required for students with special needs.

638* EQUIPMENT SPECIAL NEEDS - SERVICES (RG IN 239):
 644* ESMS DESCRIPTION (NON-KEY NAME X(25) IN 638):
 647* ESMS CODE (NAME X(7) IN 638):
 650* ESMS NO UNITS NEEDED REQUESTED (NON-KEY INTEGER NUMBE
 0 99 IN 638):
 653* ESMS COST PER UNIT PURCHASED (NON-KEY INTEGER NUMBER
 9(5) IN 638):
 656* ESMS COST PER UNIT LEASE RENTAL (NON-KEY INTEGER NUMB
 FR 9(5) IN 638):
 662* ESMS EST COST ALL UNITS (NON-KEY INTEGER NUMBER 9(5)
 IN 638):
 665* ESMS PURPOSE (NAME X IN 638):
 668* ESMS NO UNITS APPROVED (NON-KEY INTEGER NUMBER 99 IN
 628):
 671* ESMS APPROVAL DEFERRED (NAME X IN 638):
 674* ESMS APPROVAL DEFERRED INITIALS (NAME XXX IN 638):

UNIT M

Enrollments Resources Requirements (RG 698)

This repeating group contains a list of the quantities of resources required for a given program.

698* ENROLLMENT - RESOURCE REQUIREMENTS (RG IN 239):
 701* ADMIN LEVEL (NAME X IN 698):
 703* NT YET APPROVED (NAME X IN 698):
 704* ADMIN CYCLE (INTEGER NUMBER 9 IN 698):
 707* ADMIN ACTUAL ESTIMATED YEAR (INTEGER NUMBER 99 IN 698
):
 IN 698): 710* ADMIN NUMBER OF LOCATIONS (NON-KEY INTEGER NUMBER 99
 9(5) IN 698): 713* ADMIN ENROLLMENT PUBLIC MALE (NON-KEY INTEGER NUMBER
 9(5) IN 698): 716* ADMIN ENROLLMENT PUBLIC FEMALE (NON-KEY INTEGER NUMBE
 N 698): 725* ADMIN FIF ENROLLMENT (NON-KEY DECIMAL NUMBER 999.9 I
 1 IN 698): 728* ADMIN INSTRUCTIONAL COSTS (NON-KEY INTEGER NUMBER 9(6
 IN 698): 731* ADMIN COST OF EQUIPMENT (NON-KEY INTEGER NUMBER 9(6)
 1 698): 734* ADMIN BOOKS - SUPPLIES (NON-KEY INTEGER NUMBER 9(5) I
 9(5) IN 698): 737* ADMIN STUDENT TRANSPORTATION (NON-KEY INTEGER NUMBER
 698): 740* ADMIN CONTRACT COSTS (NON-KEY INTEGER NUMBER 9(5) IN
 IN 698): 743* ADMIN TOTAL DIRECT COSTS (NON-KEY INTEGER NUMBER 9(6)
 R 999.9 IN 698): 746* ADMIN PERCENT OF STATE SUPPORT (NON-KEY DECIMAL NUMBE
 N 698): 749* ADMIN SOURCES OF FUNDING (NON-KEY INTEGER NUMBER 99 I
 9(6) IN 698): 758* ADMIN AMOUNT OF STATE SUPPORT (NON-KEY INTEGER NUMBER

APPENDIX F

SAMPLE AD HOC REPORTING COMMANDS

NOTE: All outputs contained in Appendix A were generated from a simulated MISVE data base developed by project staff and are not outputs based on data obtained from the Colorado field trial.

PRINT Command Samples

In order to determine the amount of state support approved for vocational education instructional programs the following command can be posed:

```
print sum admin amount of state support where dist district
number exists:
PRINT SUM ADMIN AMOUNT OF STATE SUPPORT WHERE DIST DISTRICT
NUMBER EXISTS:
SUM 758* 360482
```

```
print sum c758 where c197 exists:
PRINT SUM C758 WHERE C197 EXISTS:
SUM 758* 360482
```

The user can query the data base by utilizing the data base definition name or component number. In this cast C758 or Admin Amount of State Support, and C197 or Dist District Number can be utilized in the query.

The following PRINT command query can be posed if information is desired about the amount of the state support which went to school district 43 to support business and office occupations instructional programs:

```
print sum c758 eq 43 and c233 eq 09:
PRINT SUM C758 WH C197 EQ 43 AND C233 EQ 09:
SUM 758* 8556
```

The command says print the sum of the amount of state support (C758) where (WH) the school district number (C197) equals (EQ) 43 and program field (C233) equals (EQ) 09.

If one wanted to know how many instructional and administrative staff persons statewide, had at least 180 months of teaching experience, the following PRINT command could be posed:

```
pr count c8 wh c95 ge 180:
PR COUNT C8 WH C95 GE 180:
CNT 8* 10
```

This command reads print the count of the STAFF (C8) where staff teaching experience (C95) is greater than (GE 180) months. Count of C8 is 10.

LIST Command Samples

To retrieve a list in alphabetical order of those 10 persons who were found in the last PRINT command to have more than 180 months of teaching experience the following command would be issued:

```
list/title l(12), l(10), l(4)/c11,c14,c17,ob c11 wh same:
LIST/TITLE L(12), L(10), L(4)/C11,C14,C17,OB C11 WH SAME:
```

* ARMENDEZ	BASCOMB	T
* BURGER	RHONDA	O
* CONBETT	GEORGIANNA	A
* FISHER	BASEL	E
* JENISCH	PETER	
* LEE	SAM	S
* MCCORMICK	DENNIS	T
* MCDONNEL	WALTER	E
* SMITH	WILLIAM	J
* WILLIAMS	RYMAN	J

The above command can be broken down as follows:

List	Display output in columnar format
/	Separator
Title	text and/or column specifications
L(12),	column 1 to be assigned 12 fields, left justified
L(10),	column 2 to be assigned 10 fields, left justified
L(4),	column 3 to be assigned 4 fields, left justified
/	Separator
C11,	STAFF LAST NAME

C14,	STAFF FIRST NAME
C17,	STAFF MIDDLE INITIAL
OB	ORDERED BY
C11	STAFF LAST NAME
WH	WHERE
SAME	SAME (refers to previous where clause i.e.)
	C95 (staff teaching experience) GE (greater than) 180 (months).

TALLY Command Sample

A TALLY command can be used to provide statistical information about unique values of elements stored in the data base. The following sample illustrates one form of the TALLY command.

```

TALLY/EACH/C89:
*****
ELEMENT-      STAFF RENEWAL CONDITIONS
*****
FREQUENCY     VALUE
-----
          4         1
          3         2
          3         5
          82        6
-----
          4 UNIQUE VALUES
-----
          92 OCCURRENCES
-----

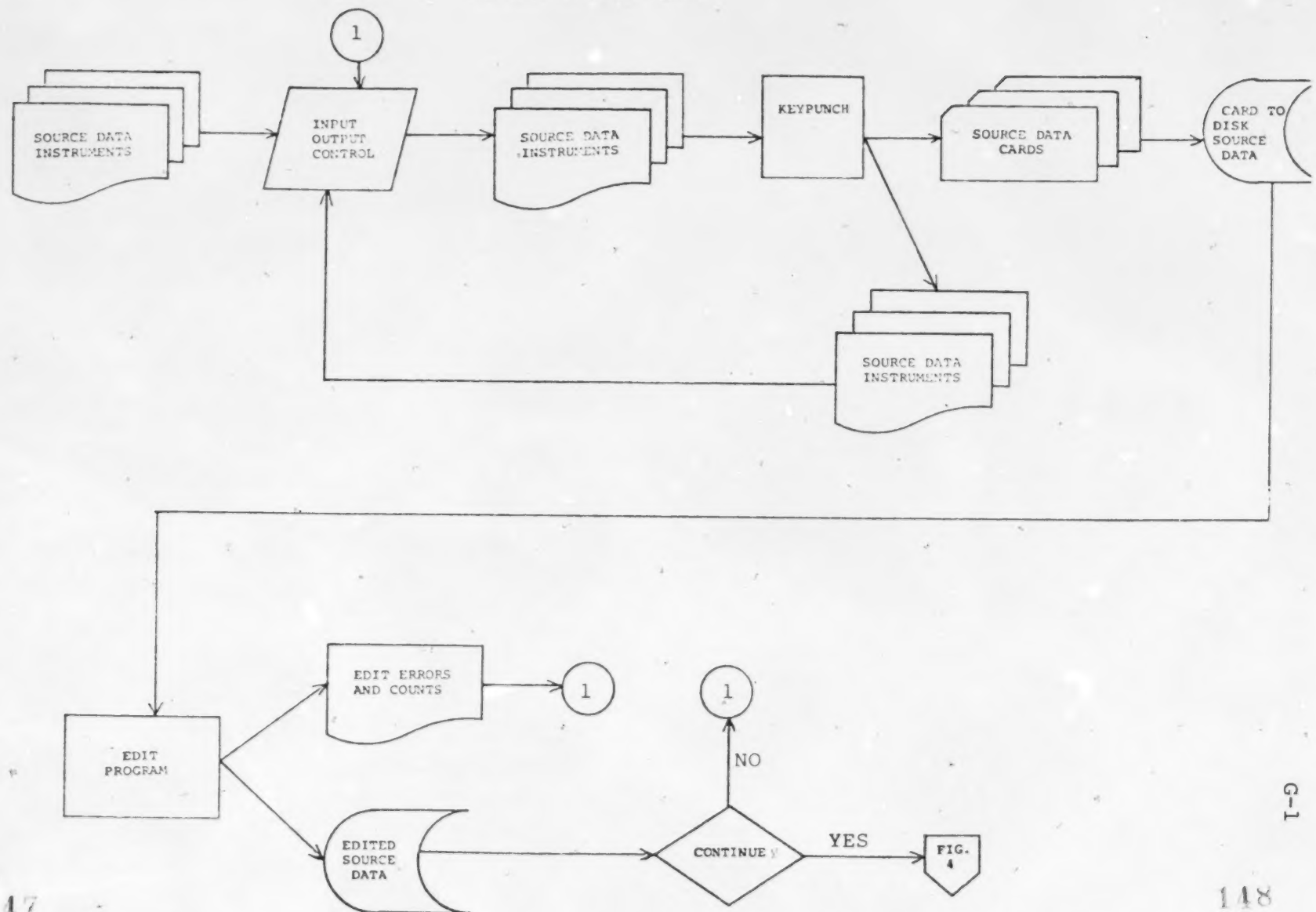
```

In this case the TALLY indicates that there are 92 occurrences of data in the data base for four types of staff renewal conditions; and a frequency distribution across the four types of renewal conditions is provided.

APPENDIX G

MISVE SYSTEM FLOW

APPENDIX C MISVE SYSTEM FLOW



APPENDIX C 1
MISVE SYSTEM FLOW (PAGE 2)

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